

# **RELATIONAL ABSORPTIVE CAPACITY: PRELIMINARY EMPIRICAL EVIDENCE FOR A RELATIONAL THEORY OF ABSORPTIVE CAPACITY IN SUPPLY CHAINS**

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## **ABSTRACT**

Relational Absorptive Capacity (RAC) is presented as an extension of the theory of Absorptive Capacity for the purpose of understanding innovation in supply chain relationships. RAC is the ability of a firm to recognize the value of new knowledge from a supply chain partner, assimilate it, and apply it for mutual benefit. The paper builds theory by developing a comprehensive multi-facet model of RAC that elaborates structural, cultural, psychological and policy facets of learning. The model is illustrated by two case studies, which more precisely show how the facets are manifested throughout the different stages of RAC.

**Keywords:** collaborative learning, absorptive capacity, relational innovation, supply chain relationships

## 1. INTRODUCTION

Competition takes increasingly place at the level of dyads, chains or networks rather than just between individual companies. Therefore, companies invest in close relationships with other companies in order to combine their respective resources in novel ways and obtain an advantage over companies that are unable or unwilling to do so (Dyer & Singh, 1998). Recent studies highlight the leverage effect of the combination of different *knowledge* resources in Inter Organizational Relationships (IOR) in general (Hardy et al., 2005) and supply chain relationships in particular (Hult et al., 2007; Paulray et al., 2008). More precisely, it is a learning process (i.e. the “*creation, retention, and transfer of knowledge*” (Vera & Crossan, 2006: p. 127) that results in relational innovations. A relational innovation is, “*any idea, practice, or material artifact perceived to be new by the relationship*” (defined in line with Zaltman et al., 1973). A relational innovation can be both small-step innovations (Cagliano et al., 2005) and radical innovations (von Hippel, 1976). It takes place when an idea, practice or artifact is novel for both partners, or when it is novel for only one of both partners but both partners are involved in the learning process of implementing the innovation. An underlying premise is that the successful relational innovation involves balancing divergent stakeholder interests if the relationship is to be sustainable in the long run (Hardy et al., 2005). Some examples of relational innovations in a supply chain context are: faster speed to market through joint buyer–supplier design (Petersen 2005); long-term cost reductions including reduced transaction costs (Hartley & Choi, 1996); improvements in conformance quality, risk reduction and reductions in capital investments (Lado et al., 1997).

The learning process underlying relational innovations is both inter-organizational and intra-organizational. In practice, it is difficult, however, to connect both facets (Fawcett & Magnan, 2002). Boundary spanners frequently obtain novel ideas and insights from partnering companies, but encounter difficulties in effectively applying this knowledge in their own firm. Extant research acknowledges that inter-organizational and intra-organizational facets feed each other but develop in parallel streams, leaving the question of *how* the interlacing of intra- and inter-organizational learning comes about unanswered (Holmqvist, 2003; 2004). Therefore, there is a need to explore the relationship between the different phases of inter- and intra- organizational learning in IOR in general (Easterby-Smith et al., 2008; van Wijk et al., 2008) and supply chain relationships in particular (Hult et al., 2000). Absorptive Capacity (AC) theory, on the other hand, does refer to the different inter- and intra- organizational stages of learning (Lane et al., 2006) and does fit into a knowledge based view of the firm (Grant, 1996). AC was defined by Cohen and Levinthal as, “*the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends*”, (1990: p. 128). AC has been used in more than 900 peer-reviewed academic articles between 1990-2002 (Lane et al., 2006). Although originally developed in an R&D context, it has potential explanatory power in a supply chain context, given that key suppliers or customers constitute important sources of new knowledge (Hult et al., 2007) and the increasing amounts of effort expended coordinating and integrating business activities between buying and supplying firms (Krause et al., 2007).

A review of existing studies on AC shows that the theory is applied to explain innovation at the company level. For example, Tu et al. (2006) and Lee and Narasimhan (2008) use AC to explain innovation in organizational processes within manufacturing firms. On the other hand, studies where AC is used to reveal the nature of relational innovation are scarce.

Dyer and Singh (1998) is a highly relevant exception. Dyer and Hatch (2004), describe how Toyota together with selected suppliers develops competitive advantage through superior knowledge sharing processes. The establishment of supplier associations for sharing of general business and technical information, consulting groups for providing workshops, seminars, and on-site assistance and learning teams for on-site sharing of know-how within small groups has led to inter-organizational learning processes and the creation of learning capabilities for the companies involved. The reported outcomes for both suppliers and buyers are higher output, lower inventories, less defects, and superior quality when compared to similar relationships between the same suppliers and Toyota's rivals.

This paper aims to develop a comprehensive model of learning processes and capabilities underlying relational innovations. It incorporates some of the theoretical insights of AC where it has been applied to the inter-organizational relationships (IOR) literature, and proposes a new construct named Relational Absorptive Capacity (RAC). One obstacle to achieving a comprehensive and useful theory of RAC as an extension of AC is the absence of in-depth frameworks that expose the inner workings of AC ( Lane et al , 2006). In order to fill this gap in the literature we incorporate research from both learning and IOR literatures. More specific, from the learning literature, we take the idea that learning processes and capability development become manifest through four different facets (structural, cultural, psychological, and policy). Specific research questions that arise are: do the four facets capture the full meaning of each of the stages of learning in RAC? Are they constant across the process, or different per stage? Where is the mutualism in this process (i.e. what does your partner teach you that helps in building RAC)? In the IOR literature we draw specifically on work done on knowledge sharing in strategic alliances and supply chain management. The literature on strategic alliances (often referred to as horizontal alliances and joint ventures) sheds light because alliances are frequently established with the stated aim to foster inter-organizational learning and thus increase performance (Salk & Simonin, 2006).

In the next section AC theory is reviewed from an organizational learning perspective. Then, Relational Absorptive Capacity (RAC) is defined as a novel extension of AC theory that incorporates new theorization about facets of learning. This model is then illustrated by two cases studies, each one involving several buyer-supplier relationships, from the retail and automotive industries. The final section provides conclusions and suggested areas for further research.

## **2. LITERATURE REVIEW**

In this section we examine AC as a construct to reveal how it informs the creation of relational innovations between buyers and suppliers in supply chains. We first present AC as a stock of knowledge visualized as the result of flows of knowledge through an organization or across organizations. The theoretical basis of this is from the organizational learning literature. Then, we examine the AC literature for its explication of the process by which it is created. We find there to be a lack of consensus centered around how knowledge is assimilated into and between the firms. Finally we review how AC is described in situations where the acquisition of the external sources of knowledge required to innovate is found in inter organizational dyads. Here we propose that there is room for an alternative,

relational view, of AC that grounds the process of AC building in individual firms but which requires the expression of AC in the actual dyadic relationship.

## **2.1 Absorptive Capacity as Stocks of Knowledge**

A stock and flow metaphor used to describe learning processes and capabilities (Vera & Crossan, 2006), is also useful for summarizing the existing theorization about how AC is created. A stock of knowledge can have human repositories (i.e. memory) and non-human repositories (e.g. standard operating procedures codified in documents). Stocks of knowledge reside within a specific level of learning, such as the individual or the organization (Bontis et al., 2002). Flow refers to all learning processes that take place at different levels and between different levels so that new knowledge is created and institutionalized (Vera & Crossan, 2006). Stocks and flows reinforce each other in a cyclical manner. That is, some prior knowledge is required to initiate the learning process, and the stock of knowledge increases as a result of the learning process (Cohen & Levinthal, 1990). On the other hand, not all types of stocks flow easily. Tacit knowledge (i.e. hard to articulate in words and symbols, often rooted in action, and context specific) flows less easy than codified knowledge (i.e. transmittable in formal, symbolic language) (Polanyi, 1966). Szulanski (1996) has referred to this phenomenon, in an organizational context, as “sticky knowledge”.

Early conceptualizations of AC tended to focus on the prior relevant knowledge stock, rather than on the learning process. Prior knowledge includes basic skills, a shared language, and insight in the scientific and technological developments in a given domain (Cohen & Levinthal, 1990). These studies assumed that a high level of AC was reflected in high levels of prior relevant knowledge stocks. The focus was on the management of the R&D function in individual firms, and R&D spending was presented as a proxy for measuring knowledge stock and therefore AC (Cohen & Levinthal, 1990). Subsequent studies on innovating companies, either followed the example of Cohen and Levinthal in operationalizing AC, or used other proxies such as R&D intensity, patents, age and size to capture knowledge stocks (Lane et al., 2006). Later studies also covered other contexts, such as international joint ventures, and classes of knowledge related to: managerial techniques; technological expertise; marketing expertise; manufacturing & production processes; and product development expertise (Lane et al., 2001). The external sources of knowledge in this case reside in the foreign parent firms that are involved.

The external sources, in the original Cohen and Levinthal work, are the industry as well as extra-industry institutions such as government and universities. These sources are accessed through hiring knowledgeable people. More recent conceptualizations of AC do not assume that firms have to hire new people to acquire new knowledge, but that new knowledge can be the product of inter-organizational learning. Intra-organizational learning then becomes important to assimilate and apply the knowledge internally (Lane et al., 2006). It is here a process perspective on AC becomes important as we elaborate in the next section.

## **2.2 Absorptive Capacity as a Process**

Cohen and Levinthal (1990) proposed that three actions were required to develop AC: recognition, assimilation and application. They did not specify the sequence of these actions nor clearly delineate when and where they started and stopped. Later studies,

however, are more precise in delineating the potential stages of AC. Lane et al. (2006), proposed that each of the three stages of AC, correspond to a different kind of learning. The first stage, labeled exploration, refers to recognizing and understanding potentially valuable new knowledge outside the firm through exploratory learning (i.e. variety-seeking processes including concepts like search, variation, risk taking, experimentation, play, flexibility, discovery, innovation, March, 1991). The second stage is labeled transformation, and refers to assimilating valuable new knowledge through transformative learning (i.e. “the combination of new knowledge with existing knowledge, allowing the latter to be used in new ways”, Lane et al., 2006: p. 855). Metaphorically speaking, this stage represents a “pipeline”, after the “funnel” of the previous stage (Zahra & George, 2002). Practically speaking, this stage implies significant intra-firm transfers of knowledge (Szulanski, 1996). Not all new knowledge can be immediately exploited, however, and therefore this stage has an important intertemporal function, whereby firms can build a “storehouse” of knowledge for later use (Garud & Nayyar, 1994). This assumes that indeed it can be retrieved or is not lost or forgotten. An example provided by Garud & Nayyar (1994) from the US pharmaceutical industry recounts that thousands of proposals for new drugs have been “shelved”, to be marketed in a later moment in time. Some of these drugs will appear to be successful in the future, whereas many others won’t even be introduced. Knowledge that seems worthless at a certain moment in time may turn out to be critical for the firm’s success in the future (Lipschitz et al., 2002). The third stage is labeled exploitation, and refers to using the assimilated knowledge to create new knowledge and commercial outputs through exploitative learning (i.e. reliability-seeking processes, including concepts like refinement, choice, production, efficiency, selection, implementation, execution, March, 1991). Zahra and George (2002) re-label and re-group activities and come up with four stages (acquisition, assimilation, transformation, exploitation), that can be grouped into two higher order constructs (potential AC and realized AC). Todorova and Durisin (2007) argued that the middle two stages of Zahra and George have to be conceptualized as parallel rather than sequential, and that consequently the constructs potential AC and realized AC lose validity.

The literature reaches a loose consensus on the initial and final stages of the process for developing AC. The remaining ambiguity resides in the middle part regarding when and how inter-organizational action from the first stage converts into intra-organizational activities that eventually lead to action in the exploitation stage. We see three possible reasons for the ambiguity surrounding the number and nature of the stages of AC. First, organizations are ambidextrous in their approach to learning (He & Wong, 2004). That is, over time firms will shift between exploration and exploitation in interaction with their intentions and environment, under the constraint of their ability to use knowledge from outside the firm (Levinthal & Myatt, 1994; Teece, 1997). And also, at one moment in time, some parts of the organization will be focusing on exploitation, whereas other parts will be focusing on exploration. The capability to explore and exploit knowledge does reinforce each other (Holmqvist, 2004). This is in agreement with the general discussion on capabilities in the operations management literature, which has moved from a trade-off view where firms cannot do all things equally well and therefore make tradeoffs to gain a competitive advantage, to a cumulative view where multiple capabilities mutually reinforce each other (Flynn & Flynn, 2004).

Second, there is confusion created by the dynamic capabilities (Teece et al., 1997) literature which highlights that firms need to be adaptable and that AC consequently has a dynamic

nature. That is, AC is geared toward effecting organizational change, whereas “normal or non dynamic” capabilities, though clearly relevant for an organization’s survival and prosperity do not relate to change (Eisenhardt & Martin, 2000; Teece et al., 1997; Zahra & George, 2002). For example, Coca-Cola’s marketing capabilities as a well developed consumer brand or Flextronics production capabilities as a successful contract manufacturer might be considered “normal.”. Nonetheless, the original description of AC by Cohen and Levinthal (1990) referred to the “*capabilities of the firm to innovate and, thus, be dynamic*” (Todorova & Durisin, 2007: p. 774). Therefore, in our opinion, there is no need to add the adjective “dynamic”, and dynamic AC has the same essence as AC.

Third, the literature on AC does not elaborate on the different levels at which learning takes place, such as individuals, groups, organizations and dyads. In general, research on learning and innovation focuses on one level of analysis (Rothaermel et al., 2007) which gives an incomplete picture of this inherently multi-level phenomenon (Gupta et al., 2007). Acknowledgement of all these levels at which learning takes place, and the feedback and feed forward relations between these levels (Crossan et al., 1999), aids in understanding that the stages are not as clear-cut as suggested by the majority of the studies on AC. For instance, an individual boundary spanner may still be exploring, while his/her department is already assimilating the newly obtained knowledge. Alternatively, an individual boundary spanner may already have assimilated certain new knowledge, while his/her department is still exploring new possibilities in another domain of interest. The reality of modern managerial work is that organizations are engaged in multiple projects at various stages of completion where individuals may be involved in multiple projects spanning cross functions and organizations.

In this section we have highlighted ambiguity regarding the precise number of stages in a process of AC building. We have provided three reasons that explain this ambiguity. In order to get on with understanding AC in supply chain relationships, we accept Lane et al’s. (2006) conceptualization of AC as a three stage model. Up to this point in this paper we have not addressed the other key ingredient in the definition of AC, that being, that the source of knowledge is external to the firm. Given our interest in relational innovation in supply chains, the next section addresses AC in a dyadic IOR context.

### **2.3 Absorptive Capacity as a Dyadic Level Construct**

Where studies have viewed AC as the result of an IOR relationship, successful AC creation hinges on the similarity of both firms’: (a) knowledge bases; (b) organizational structures and compensation policies; and (c) dominant logics, norms and values (Lane & Lubatkin, 1998; Lane et al., 2001). Moreover, AC is a function of the extent to which both firms have developed interaction routines for maximizing interactions (Dyer & Singh, 1998). The common thread of these three studies is that they provide relational antecedents of AC, but do not develop in-depth the different stages of a relational application of AC. Lane and Lubatkin (1998) and Lane et al. (2001) differ from Dyer and Singh (1998) in that the former two view AC as a firm-level construct and the outcomes of AC are oriented towards the functioning of the firm, whereas the latter elaborates it as an interfirm construct and its outcomes are geared towards the functioning of the relationship as a whole (called “relational rents” by the authors).

We propose an intermediate approach to AC which addresses the nature of the buyer – supplier dynamics in most supply chain relationships. AC resides within the individual firm as advocated by the Lane et al. studies and outcomes are reflective of relational innovations as suggested by Dyer and Singh. The locus of capability formation is at the firm level because it is the individual firm and not the dyadic relationship that implements and institutionalizes new ideas, practices, or material artifacts. The exception to this can be said to be joint ventures where two firms create essentially another firm. In the context of supply chain management, new ideas, practices, or material artifacts reside in the relationship and not the individual organization (i.e. relationship specific assets are created). For instance, supplier development programs are part of the buying firm’s capability where the aim is to guide suppliers in implementing desired changes for the benefit of the dyadic relationship (Krause, 1999). Another example is provided by Toyota’s consulting groups, which are a firm level capability, that are established to aid key suppliers in improving boundary spanning processes and thus increase relationship effectiveness (Dyer & Hatch, 2004). There can be spill-over effects to other buyer –supplier relationships as either party could use the new knowledge to improve its relationship with competitors of the partner organization. Compared to the main effect of dyadic learning, spillovers may be relatively small. For example a Toyota Motors executive was quoted as saying, “*We are not so concerned that our knowledge will spill over to competitors. By the time it does, we will be somewhere else*” (Dyer & Hatch, 2004: p. 63). Thus, the main outcomes of dyadic learning are dependent on firm level capabilities but they are specific to the dyad. Learning embodied in RAC from one buyer-supplier relationship can be applied to other relationships but there is a need for dyad specific learning applied to adaptation which takes time and effort. In other words there is “stickiness” in the knowledge created in dyads (Szulanski 1996).

The different approach in our conceptualization of learning in dyads in terms of the locus of capabilities and outcomes is presented in Figure 1. Our model of Relational Absorptive Capacity (RAC) for dyadic supply chain relationships is positioned relative to alternative approaches to AC in the broadly defined IOR literature. The lower left hand cell in Figure 1 where dyadic capabilities result in firm level outcomes as exemplified in joint ventures is beyond the scope of this paper. In the next section we develop the concept of RAC mindful of the strengths and weaknesses of AC research discussed in this section.

**Figure 1 Focus of the different studies on AC with a relational approach**

Location of outcome	Firm	Dyad
Location of capability		
Firm	Lane and Lubatkin (1998) Lane et al. (2001)	This paper
Dyad	Studies on Joint Ventures	Dyer and Singh (1998)

### 3. RELATIONAL ABSORPTIVE CAPACITY (RAC)

We define Relational Absorptive Capacity (RAC) as: “*The ability of a firm to recognize the value of new knowledge from a supply chain partner, assimilate it, and apply it for mutual*

*benefit*". Although RAC resides within the individual organization, the dynamic combination of RAC of both partners will lead to synergies, which produce innovations at the level of the dyad, which would not be possible without joint learning. These innovations can be process improvements such as collaborative forecasting models which eliminates inventories and increases product availability. Alternatively this can be product innovations where customers learn to incorporate new product features from the supplier and suppliers learn to design and produce for new product categories and markets. From the previous discussion four main premises underlie our conceptualization:

*Premise 1: Evidence of RAC is expressed through the number of people that interact with members of the partnering organization (stocks of knowledge).*

*Premise 2: Evidence of RAC is expressed through activities that transfer knowledge between individuals, groups and organizations of the studied relationship (flows of knowledge).*

*Premise 3: Evidence of RAC is expressed through the number and scale of relational innovations as a result of buyer–supplier collaboration (flows of knowledge).*

*Premise 4: Relational innovations are the emergent combination of RAC from both partners.*

In the next section we develop RAC similarly as in the previous section on AC describing it as stock of knowledge developed in supply chain dyads. After that we focus on describing the various facets of the learning process associated within supply chain dyads

### **3.1 Relational Absorptive Capacity as Stocks of Knowledge**

The transactional nature of supply chain relationships involves the exchange of specific stocks of knowledge. For suppliers the following information from the buying organization may be relevant to relational innovations: production schedules, cost structures, margin structures, inventory planning, demand patterns, marketing strategies, decision making criteria, decision making procedures. For the buying organization the following information from the supplying organization is relevant to relational innovations: pricing schedules, capacity planning, production schedules, marketing strategies, margin structures, cost structures, products/services in development (Klein, 2002). These transaction-oriented stocks of knowledge should be complemented with critical, competitively sensitive information, such as knowledge on upcoming product innovations (Goffin et al., 2006), and the sharing of organizational successes and failures (Krause et al., 2007; Modi & Mabert, 2007), in order to get long term relational benefits. These stocks of knowledge stocks are in addition to those that are commonly mentioned in other IOR, such as joint ventures and strategic alliances, involve the sharing of managerial techniques; technological expertise; marketing expertise; manufacturing and production processes; and, product development expertise (Lane et al., 2001).

Besides the previously mentioned classes of *technical* knowledge, stocks of *social* knowledge are also relevant for reaching relational innovations. Social knowledge refers to individuals within the relationship having knowledge of each other such that they know “who knows what and where critical expertise resides within the firm” (Dyer & Singh, 1998: p. 665). Shared social knowledge leads to joint understandings and frames of reference that guide “how to think about”, “how to talk about”, and “how to act on”. Consequently, it facilitates coordination between both organizations (Hardy et al., 2005). Social knowledge also refers to knowledge on culture and power relations within the partnering firm as well as power relations within the relationship (Wagner et al., 2002), and



knowledge on conflicts, trouble spots and changing situations in the partnering organization (Moss-Kanter, 1994). Moss-Kanter suggests that social knowledge amongst an appropriate level of managerial authority is important because: “*the more contact top executives have, the more changes they will hear about, the more chances they will have to work things out, the more information they will be able to turn into benefits, and the greater the possibilities that the companies will evolve in complementary rather than conflictive situations*” (1994: p. 105).

Social issues are difficult to express in words and symbols, and are therefore likely to remain tacit (Edmondson et al., 2003; Hardy et al., 2005). A relevant exception is provided by Dyer and Singh (1998) in the examples of Fuji and Xerox. Both firms systematically codified formerly tacit knowledge on inter-organizational behavior. More specifically, they built a communications matrix that relates relevant issues with the persons that can apply expertise to each issue. Dyer and Hatch (2004), describe the supplier certification process at Dell. As part of the program, engineers from the supplier organizations are taught about the language, process, and metrics used by Dell and thus “how to think like Dell”, to facilitate production coordination (2004: p. 59). The absence of this tacit knowledge causes communication among participants to be contradictory and confusing, making it more difficult to effectively develop and implement new ideas. The presence of this tacit knowledge, on the other hand, also makes relational innovations unique, because it is difficult to imitate and transfer (Dyer & Singh, 1996).

Buyers and suppliers can exchange knowledge to coordinate their exchanges better but without necessarily improving the understanding of their business environment and the changes required to confront the future. This is reflected in recent studies on supply chain relationships that focus more on the sharing of knowledge between companies than on its subsequent assimilation and exploitation (e.g. Hult et al., 2007; Modi & Mabert, 2007; Paulray et al., 2008). The story behind these studies is simply that the sharing of information between buyers and suppliers leads to superior performance. The nature of the information and how it is converted to useful knowledge to be incorporated into products and processes is not explored in-depth. It is assumed that the brains of individuals, the routines of processes and the structures of organizations somehow come together over time to produce innovation. This issue will be dealt with in the next section. First, building upon learning literature, we develop levels of learning for each of the three stages of RAC, and the mechanisms to move from one level to the other. Second, building upon the IOR literature we develop the facets of learning in each of the stages of RAC.

### **3.2 Relational Absorptive Capacity as a Process of Learning with Multiple Facets**

Not all organizational learning processes lead to desirable outcomes such as in the case of superstitious learning (Levitt & March, 1988). Productive learning is a subset of the overall organizational learning phenomenon subject to two conditions. First, it generates valid knowledge, that is, “*knowledge that has withstood critical evaluation and is not based on willfully distorted information or unquestioned interpretations*” (Lipshitz et al., 2002: p. 81). Second, it should lead to action, that is, “*lessons that are learned but not implemented are of little consequence, regardless their validity*” (Lipshitz et al., 2002: p. 81). Learning processes that build RAC result in the implementation of relational innovations and increased valid knowledge stocks. Therefore, the definition of productive learning is in line with the learning processes of RAC. Consequently, the normative model of productive

organizational learning containing structural, cultural, psychological, and policy facets<sup>1</sup> (Lipshitz et al., 2002), is suitable to parsimoniously describe the learning processes of RAC. Structural facets refer to organizational arrangements that permit individual level learning to migrate to higher levels of learning such as to the rest of the organization. This involves, “*observable organizational subsystems in which organizational members interact for the purpose of learning*”, such as roles, functions, procedures (Lipshitz et al., 2002: p. 82). Cultural facets refer to a set of norms, that are conducive to generate productive learning: transparency (i.e. “*exposing one’s thoughts and action to others in order to receive feedback*”); integrity (i.e. “*collecting and providing feedback regardless of its implications*”); issue orientation (i.e. “*focusing on the relevance of information to the issues regardless of the social standing or rank of the recipient or the source*”); inquire (i.e. “*persisting in investigation until full understanding is achieved*”); and, accountability (i.e. “*assuming responsibility for both learning and implementing lessons learned*”) (pp. 85-86). Psychological facets refer to psychological states, such as psychological safety (i.e. “*a state in which people feel safe to make errors and honestly discuss what they think and how they feel*”, p. 87) and organizational commitment (i.e. “*the extend to which organizational members identify with an organization’s goals and values and make no distinction between promoting its interests and their own personal ones*”, p. 87), that determine the extend to which individuals enact the previously mentioned norms. Policy facets refer to how management can facilitate organizational learning, either through formal or informal steps. This is expressed in policies, rules, budgets, and so forth. Especially important policies are: commitment to learning, tolerance for error, and commitment to the workforce (Lipshitz et al., 2002). Below we will elaborate how IOR literature has dealt with each facet.

### 3.2.1. Structural facets in IOR

The structural facet is most evident when learning is discussed in IOR literature pertaining to our conceptualization of RAC. Broadly speaking, the structural facet of the first exploratory stage of RAC is characterized by “*interaction routines that maximize the frequency and intensity of sociotechnical interactions between partners*” (Dyer & Singh, 1998). Translated from the firm perspective to buyer-supplier relationships, this refers to activities such as supplier development programs (Krause et al., 2007; Modi & Mabert, 2007) Supplier development programs are, “*any effort by a buying firm to improve a supplier’s performance and/or capabilities to meet the buying firm’s short- and/or long term supply needs*” (Krause, 1999: p. 206). A key example of a specific supplier development activity is supplier evaluation, which refers to the assessment of the supplier’s performance in the context of the current and future needs of the buying firm. The results of the evaluation are communicated to the supplier, with the desired outcome being that the supplier follows up with improvement suggestions. Moreover, the evaluation functions as a catalyst for innovation (Prahinski & Benton, 2004). Implied in the supplier development concept is that the buying firm takes the lead. It does not mean that suppliers are not proactive in managing the relationship. Marketing has an established literature on the seller’s involvement in joint value creation and extraction in the buyer-seller relationship (e.g., Jap 1999, 2001). Supplier evaluation is concentrated on the exploratory stage of learning. Depending on the communication strategies employed, subsequent stages of RAC may be included. The communication of a supplier evaluation may include: indirect

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<sup>1</sup> We do not include the sixth contextual facet, because it is exogenous to the model, and thus outside of the scope of this paper which is focused on developing the internal structure of the RAC model.

influence strategy such as education, training and site visits; formality such written reports; feedback such as bi-directional conversations; and collaboration which involves all of the previous three strategies combined (Prahinski & Benton, 2004). The first two strategies remain at the exploratory stage, whereas the latter two also involve assimilation and exploitation.

The supply chain literature provides many other examples of structural facets, for the different stages of RAC. For example, internal integration through cross-functional interaction, joint establishment of goals, and cross-level interaction (Das et al., 2006; Johnston & Kristal, 2008; Mohrman et al., 2003; Katz & Pagell, 2003; Tu et al., 2006) is especially important in the assimilation stage where other departments have to be convinced of the usefulness of a new idea. JIT/Lean/6sigma programs are examples of structures that facilitate exploitation and efficiency seeking within the operations of companies. In the next sub section we will develop the other three facets but find that the evidence for each of these facets is scarcer.

### **3.2.1. Cultural facets in IOR**

As pointed out before, Lipshitz et al. (2002) present five norms for behavior (transparency, integrity, issue orientation, inquiry, accountability) that are conducive to organizational learning. Calantone (2002) confirms empirically the positive impact of cultural norms for learning behaviour on organizational performance. When analyzing the norms for learning behavior, an important difference between RAC and AC becomes evident. Whereas AC embraces both competitive (as in competitive intelligence gathering) and collaborative learning (Hamel, 1991; Larsson et al., 1998), RAC only refers to collaborative learning. The aim of learning in RAC is to improve the relationship rather than just the individual organization although the individual benefits are strong motivators for engagement. Thus, the collaborative context of RAC implies adding a sixth key norm for learning behaviors: relational orientation. That is, *“the degree to which interacting boundary spanners stress collaboration and cooperating in performing boundary spanning processes”* (Hult et al., 2000: p. 295). Finally, the supply chain context of RAC implies adding a seventh key norm: cultural competitiveness. That is, *“the degree to which chains [and thus each of its members] are predisposed to detect and fill gaps between what the market desires and what is currently offered”* (Hult et al., 2002: p. 577). This set of seven norms applies during all three stages of RAC. Nonetheless, some norms are more important in certain stages. For instance, transparency seems especially important during exploration, because it facilitates trust between both partners. Cultural competitiveness seems especially important during assimilation because it provides a higher order goal that can focus the attention and interests of both partners. Accountability seems especially important during exploitation, and is inherent in improvement programs such as Six Sigma.

### **3.2.1. Psychological facets in IOR**

Psychological safety is defined as, *“a shared belief by members of the team that the team is safe for interpersonal risk taking”* (Edmondson, 1999: p. 350). It goes beyond interpersonal trust, which has been broadly covered by literature on IOR, as it describes *“a team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves”* (Edmondson, 1999: p. 354). A nuance of this facet is the inclusion of senior management’s commitment to the team as perceived by the team members. The

encouragement of top management commitment and support is important during all stages, but the psychological safety that it engenders may be most important during the first stage of RAC. For example, in inter-organizational teams, individuals expose their strengths, weaknesses, biases and agendas to unknown individuals with potentially negative reactions.

### **3.2.1. Policy facets in IOR**

Policy facets refer to how management can facilitate organizational learning whether through informal or formal rules and directives. The learning literature highlights compensation strategy as a key policy to increase employees' commitment to learning and their understanding of the overall purpose of the organization (Jerez-Gómez et al., 2005). Compensation practices can influence innovative and problem-solving abilities at different levels of organizing (Lane & Lubatkin, 1998). Applied to a relational context, this means for example that senior buyers' wage may depend upon the number of arm's length supply relationships that have been converted into close cooperative relationships. "Close" is measured through the successful implementation of an inter-organizational information system for joint planning and forecasting. Another policy, may the negotiation positions and strategies of a partner regarding the sharing costs and benefits from joint improvement projects (e.g. Jap, 2001). These negotiations should best be conducted up-front in order to reduce ambiguity and align both partners' intentions (Goffin et al., 2006), leading to more exchange of knowledge and learning in the exploitation stage of RAC. The "strategic purchasing" policy, on the other hand, is especially powerful in the assimilation stage. This policy implies that supply professionals have job descriptions that allows them to assume the liaison role connecting external suppliers with internal customers in the organization (Chen et al., 2004). Hult et al., (2000) mention the superior position that purchasers can have on leading performance improving change using their insights about the capabilities of suppliers. The literature is strangely silent regarding learning policies for the exploitation stage of RAC other than that firms do not often have effective policies for exploiting fully their own operating knowledge let alone that of a partnering firm (i.e. Johnston et al. 2004).

Overall, the literature place most of the emphasis on the structural aspects of learning during all stages of RAC. Structural facets are necessary but not sufficient for generating productive learning leading to relational innovations. Cultural, psychological and policy facets may supplement the better known structural facets but may also be critical antecedents and moderators. Therefore, in the next section we will explore two cases in order to further understand how the different facets of learning become manifest during the different stages of RAC. But first we will describe the empirical research method.

## **4. METHOD**

The case study method is most appropriate for theory building around novel concepts (Eisenhardt, 1998; Yin, 2003), as is the aim of this paper. RAC is initially captured per buyer-supplier relationship and then generalized per focal buyer. Aspects that are specific to a specific relationship are highlighted in that regard. In other words, the level of analysis is embedded and within one case several supplier relationships are studied. The theoretical sampling of cases is based on the criterion of industry; i.e. to study different industries. The theoretical sampling of relationships within each case is based on the presence of innovation projects with the specific supplier. Different data sources are used in order to

triangulate, as shown in Figure 2. Interviews are semi-structured and include questions on the different stages and facets of learning within each of the discussed projects, as well as on critical incidents (who, when, why, what, where, etc.) within the relationship. The coding of the data from different sources is done in parallel by 3 individual researchers, based on the stages and facets of RAC (as defined in our literature review), and after that results are discussed and agreed upon. This is a work in progress and therefore the results have a preliminary nature.

**Figure 2 Data sources (current status)**

<b>Case 1: RETAILCO</b>		<b>Case 2: SERVICECO</b>	
Relationship with TOOLSCO	Relationship with CERAMICO	Relationship with BEARINGCO	Relationship with TOOLSCO2
<b>DATA FROM INTERVIEWS</b>			
<b>RETAILCO</b> - Operations Director (IS, Organization and Logistics) - Responsible Logistics Tools - Organization analyst	<b>RETAILCO:</b> - Operations Director (IS, Organization and Logistics) - Responsible Logistics Ceramics	<b>SERVICECO:</b> - Distribution projects manager - Logistics Development Engineer 1	<b>SERVICECO:</b> - Distribution projects manager - Logistics Development Engineer 2 - Senior buyer of TOOLSCO products
<b>TOOLSCO1:</b> - Logistics Director - Logistics Manager - Logistics Analyst	<b>CERAMICO:</b> - TBA	<b>BEARINGCO:</b> - Global Account executive - Sales Engineer	<b>TOOLSCO2:</b> - TBA
<b>DATA FROM OBSERVATION OF INTERORGANIZATIONAL MEETINGS</b>			
TBA	Attendants RETAILCO - Purchasing manager - Senior buyer Ceramics - Responsible Logistics Ceramics - Daily Coordinator Logistics Ceramics Attendants CERAMICO - Sales Manager - Logistics Director - Purchasing Director - Responsible customer service	TBA	Attendants SERVICECO: - black belt of project - Logistics Development Engineer 2 - Logistics Development Engineer 3 - Senior buyer of TOOLSCO products Attendants TOOLSCO2: - transportation analyst
<b>DATA FROM SHARED DOCUMENTS</b>			
Minutes of interorganizational meetings		Powerpoints of interorganizational meetings Intranet / Extranet	Powerpoints of interorganizational meetings Intranet / Extranet

## 5. RESULTS

Below we will first provide short case descriptions for each of both focal buying firms. Within each case description, we will describe the two analyzed strategic supplier relationships. After that, the results according to our research framework of RAC will be presented per case.

## 5.1 Short Case Descriptions

Figure 3 provides the main distinguishing characteristics between both cases, and within each case between both relationships.

**Figure 3 Main differences between cases and relationships.**

Case 1: RETAILCO		Case 2: SERVICECO	
<ul style="list-style-type: none"> <li>- Retail</li> <li>- Spain based</li> </ul>		<ul style="list-style-type: none"> <li>- Automotive</li> <li>- US based</li> </ul>	
Relationship with TOOLSCO1	Relationship with CERAMICO	Relationship with BEARINGCO	Relationship with TOOLSCO2
<ul style="list-style-type: none"> <li>- low local autonomy</li> <li>- formal</li> <li>- maturity stage of relationship</li> <li>- RETAILCO more reactive attitude</li> </ul>	<ul style="list-style-type: none"> <li>- high autonomy</li> <li>- formal + informal</li> <li>- initial stage of relationship</li> <li>- RETAILCO more proactive attitude</li> </ul>	<ul style="list-style-type: none"> <li>- high local autonomy</li> <li>- formal + informal</li> <li>- BEARINGCO more open to share information</li> </ul>	<ul style="list-style-type: none"> <li>- low local autonomy</li> <li>- formal</li> <li>- TOOLSCO2 more reluctant to share information</li> </ul>

### 5.1.1. Case 1: RETAILCO

Spanish subsidiary of a multinational retail chain with a local turnover of more than a billion Euros, and 9000 employees. The management team is composed by regional managers and managers in the areas of: HR, Marketing, Finance, Product Development, Purchasing, and Operations. Lower organizational levels are organized around product categories (such as tools and ceramics). Transportation and warehousing are subcontracted. On a corporate level, the philosophy is to have a decentralized business model, in order to foster a high degree of participation of the local subsidiaries as well as innovation on a local level. This is furthermore stimulated by compensation practices; i.e. the staff can become shareholders in the company, and monthly compensation is partly based on local level performance.

***Relationship with TOOLSCO1*** This relationship has a duration of approximately 20 years. TOOLSCO1 stands for an Iberian region office of a multinational manufacturer of tools and related services, with a local turnover of more than 400 million Euro and 7000 employees. RETAILCO is the most important client on the category level for TOOLSCO1. Transport and warehousing are subcontracted. Direct delivery takes place by official distributors to the stores, and daily contact thus flows through each of the individual stores. The headquarters of TOOLSCO1, in contrast to RETAILCO, have a centralized business model and innovation on a local level is therefore more difficult to realize. The most important relational innovation discussed between both partners concerns changes in the operational goods and documents flows in order to increase supply chain performance. The status of this innovation is: exploitation.

***Relationship with CERAMICO*** This relationship has only recently started; the actual exchange initiated in January 2009, after a period of preparation in 2008. CERAMICO is a Spanish manufacturer of ceramics, founded in the sixties which has some 1000 employees. The ceramics products category is of increasing strategic importance for RETAILCO. The most important relational innovations is a dedicated distribution channel from CERAMICO to RETAILCO. rather than through one of the three standard preexisting

distribution channels of RETAILCO. The status of this innovation is: exploration stage. Second, the relationship between both partners is innovative in itself, as RETAILCO represents a novel sales outlet for the products of CERAMICO; i.e. CERAMICO used to sell its products in outlets oriented towards a higher segment of buyers. The latter innovation is currently in the exploitation stage.

### **5.1.2 Case 2: SERVICECO**

Serviceco is a North-American provider of after-sales parts to the construction machinery manufacturing industry, with approximately a turnover of 10 billion dollars and 10,000 employees. It was founded approximately 20 years ago. SERVICECO's parent company was founded more than 100 years ago. SERVICECO supplies similar parts to the parent for manufacturing of new products. The company pursues a Six Sigma management philosophy that focuses on the continuous elimination of "waste" in all organizational processes.

***Relationship with BEARINGCO:*** BEARINGCO is a manufacturer of bearings from the same geographical region as SERVICECO with approximately a turnover of 6 billion dollars and 25,000 employees. The two companies have been doing business together since 1920. From the pool of three suppliers that deliver similar products, SERVICECO considers BEARINGCO as most strategic because of its relative exchange volume and quality of the interorganizational relationships.

***Relationship with TOOLSCO2:*** this relation goes back approximately 25 years. TOOLSCO2 is a single legal entity within a broader corporation of which TOOLSCO1, mentioned in the previous case represents a region office. TOOLSCO2, with an approximate sales volume of 8 billion dollars and 40,000 employees, supplies motors and generators to SERVICECO. Both companies jointly develop the products that TOOLSCO2 subsequently produces and sells to SERVICECO.

## **5.2 RAC in Case 1 RETAILCO**

Figure 3 describes the (sub)facets of learning, present in the RETAILCO case, and how they manifest themselves through the process of RAC. The most relevant structural facet is the participation of managers in communities of practice (associations of professionals from different companies with similar interest, in this case supply chain management). These communities provide the opportunity to explore ideas with potential partners. Regarding cultural facets, the cultural competitiveness norm (Hult et al., 2002; 2007) is manifested during the exploration stage, but not always followed up during assimilation and exploitation. Consequently, the project with TOOLSCO1 was delayed. This seems to be because the improvement of supply chain relationships is not top management priority. But also because each partner has a different perception of scope. TOOLSCO1 focus is very narrow and referring to the specific relationship with RETAILCO, whereas RETAILCO is more broadly interested to apply the newly obtained knowledge to relationships with other suppliers. On the other hand, the alignment of cultural norms impacts positively in the learning processes. Initially, RETAILCO was pleasantly surprised to learn that CERAMICO emphasized as least a similar desire to use technology to support operational processes. Consequently, they engaged in discussions about several

topics both technical and about the business relationship with this partner. Regarding psychological facets, boundary spanners stress the importance of working with capable and collegial persons from the partner. It is not only the reputation of a company that matters for partnering, but also the characteristics of critical boundary spanners. Regarding policy facets, compensation practices that involve rewarding local performance positively impact the attitude towards learning with a partner, but only if individuals are aware of the importance of supply chain processes for organizational performance.



**Figure 3 Facets and stages of RAC in RETAILCO**

	<b>exploration</b>	<b>assimilation</b>	<b>exploitation</b>
<b>structural facets</b>			
- participation in communities of practice	Opportunity for discussion between management of both partners of broad ideas about relational innovation	Internal explanation of necessity of relational innovation effectively done by member of community of practice	
- internal cross-functional meetings		Increases understanding of strategy and the complete business process	
- training by supplier of store personnel			Increases knowledge on products and processes of the partner, and aids in daily operations
- supplier certification			Assures that certain basic habits, which are required before further improvements can be made, are implemented and followed up
- site visits: show how the supplier's product is dealt with	Increases awareness of issues, constraints and possibilities of partner. Provides opportunity to exchange and create new knowledge		
- suppliers network		Participation and knowledge of other supply chains facilitates the understanding of new initiatives in a focal relationship	
<b>cultural facets</b>			
- transparency	Sharing successes and failures increases mutual understanding and respect	Insight in the partner's internal functioning increases the probability to understand and accept new projects to be carried out with that partner	
- cultural competitiveness	The pro-active search of ways to improve the match between supply and demand is present in the CERAMICO relationship, though not in the TOOLSCO relationship	Novel CERAMICO relationship: flexibility to consider adapting own processes, based on the supplier's suggestions (e.g. direct delivery rather than cross-dock in order to speed up the order-to-delivery cycle). Long lasting TOOLSCO relationship: much less flexibility	(-) Although contracts have a clause about penalization when supplier does not deliver according to the agreement, they are mostly not followed up. Only in cases of extreme despair.
- alignment of norms	The company opens up to a partner that demonstrates to be as advanced (or more) in the use of technology		
<b>psychological facets</b>			
- psychological safety	Higher for boundary spanners who feel confident about their knowledge of industry (best) practice, and therefore share experiences/anecdotes of other supply chains	Aids in "selling" the idea to other involved departments internally	
- personal chemistry	Important to deal with competent people who are motivated to innovate, but who are also nice (and able to talk about other topics than business)		
<b>policy facets</b>			
- management commitment	Highlight that all improvement initiatives of the supply chain should be based on a win-win idea	Operations Manager, who is most strongly focussed on improvements in the supply chain, is in the position to convince other Managers (such as Purchasing) about relevance improvement projects (both of operational nature (project with TOOLSCO) and strategic nature (project with CERAMICO))	Progress of project with TOOLSCO is slow.
- active involvement of different hierarchical levels and functional areas	Broader and more complete view is constructed.	Anticipates assimilation	Creates sense of ownership among participants and facilitates implementation
- compensation strategy	Compensation partly based on performance, and therefore stimulates to discuss potential improvements with partner	Compensation partly based on performance, and therefore stimulates to consider improvement ideas	Compensation partly based on performance, and therefore stimulates to implement improvements

### 5.3 RAC in Case 2 SERVICECO

The most important SERVICECO action which could be classified as a structural facet was the establishment of a 15 person supplier development department in 2007. Each of these persons became responsible for improving the relationship with one or more key suppliers. The use of SWOT (Strengths, Weaknesses, Opportunities, and Threats) analyses is a vital practice in the department in that regard. But also suppliers are involved in this process:

*“I do try to encourage suppliers to bring up any issues ... What pain do we cause to you Mr. Supplier? And then we brainstorm to see what the options are to lessen the pain or fix the issue”* (Logistics Development Engineer 1 SERVICECO).

Centralization of communication into one department brought out the “voice of the supplier”. The company learned many things from suppliers such as: “Doing business with SERVICECO is like doing business with 10 companies”; “Multiple communication methods for the same information drives confusion and cost”; “SERVICECO says my performance is X, but my records show Y”; and “Different methods of measurement and reporting across the enterprise drives confusion and cost” (source: a Powerpoint presentation used to present the new department, internally and externally). Consequently, since the establishment of the new department the frequency and the depth of interorganizational meetings has increased considerably. These meetings do not only address already identified issues, but also reveal important emerging issues, as illustrated in the following quote:

*“until you start talking about what is going on, you don’t realize you have a problem sometimes”* (Logistics Development Engineer 1 SERVICECO).

The most important cultural facet concerns the cultural competitiveness norm. The inherent holistic view of the supply chain is rather recent, as illustrated by the Distribution Projects Management, who claims that SERVICECO has grown from the attitude towards the supplier, illustrated by:

*“Tell us what you are doing where you have not achieved our expectations”.*

Towards a novel attitude, illustrated by:

*“Tell us what we need to do to further improve your business”.*

The most important psychological facet is psychological safety. Individuals that have worked in several functional areas feel that they really represent their company when dealing with the supplier and discussing improvement initiatives versus they are exposing themselves to making commitments that are not supported later by the organization.

The most important policy facet is management commitment to the supplier relationship. This is important as it guarantees continuous support of improvement initiatives, during all stages of RAC. For example, when copper prices were increasing dramatically a supplier that used significant quantities of copper experienced financial problems. Rather than paying the under valued, but contractually agreed upon, price for copper SERVICECO agreed to pay the market value so the supplier would suffer financial hardship.

Figure 4 describes the (sub)facets of learning, present in the SERVICECO case, and how they manifest themselves through the process of RAC.

**Figure 4 Facets and stages of RAC in SERVICECO**

	exploration	assimilation	exploitation
<b>structural facets</b>			
- supplier development department	The centralization of communication on improvement ideas - from both external and internal sources- permits to place the ideas in a broader perspective and increase the feasibility for further exploration	The accumulation of relational knowledge within one department improves its position to explain new relational ideas to other departments, influence in decision taking at the functional level, through highlighting the results for the process as a whole.	The process focus inherent in this department assures a monitoring of all facets of the progress of implementation.
- regular interorganizational meetings	New ideas are generated during the general evaluation of the relationship and discussion of related business topics.		
- interactive supplier evaluation	Areas for improvement and root causes are detected from both sides of view.	The definition of KPI's is the result of extensive previous discussions, therefore ideas to improve some KPI are relatively easy to assimilate within the organization.	KPI permit to monitor change over time and respective to other suppliers.
- interactive supplier portal		Provides an overview of current projects and issues with supplier and facilitates therefore the assimilation of new ideas	The real time sharing of information about engineering, shipping and packaging, and the exchange of each partner's point of view on current order statuses improves operational performance
- 6sigma	The associated continuous improvement philosophy increases the number of new ideas generated and exchanged.	The organization wide continuous improvement philosophy opens the door of other areas to listen to new ideas	The associated project management techniques increase the chance of succesful implementation
- internal cross-training		Training in related areas in the same company improves process view rather than mere functional view.	
- interorganizational communication matrix			Codified social knowledge: facilitates the tracking of implementation activities and capturing of progress
- process/partner diagram			Reduces ambiguity during implementation of new processes, by showing in what part of the process the partner intervenes
- intra-organizational knowledge network		Fosters the sharing of ideas in a democratic fashion, and makes people gradually get used to new viewpoints (not obligatory to read)	
- site visits: show how the supplier's product is dealt with	Increases awareness of issues, constraints and possibilities of partner. Provides opportunity to exchange and create new knowledge		
- suppliers network		Participation and knowledge of other supply chains facilitates the understanding of new initiatives in a focal relationship	
<b>cultural facets</b>			
- transparency norm	The partner functions as a mirror when the company exposes itself. On the other hand, transparency by the partner increases understanding of its issues, constraints and possibilities	Transparency leads to mutual understanding of the current situation, which facilitates the assimilation of a new idea	The sharing of implementation issues with the partner increases understanding and often takes away the causes of delay.
- relational orientation norm	Knowledge exchange and creation with the partner is in line with the companies vision and strategic mission that highlights the importance of supply chain partners.		
- cultural competitiveness norm	Guides the continuous search to improve the match between supply and demand	The novelty of the supplier development department causes it to be still relatively unknown, and this cultural norm is currently only strongly present in the supplier development department	Focus on implementation and operational performance
- alignment of norms	It is important to feel that the partner is worried about same issues, and that his actions are guided by similar norms	It is important to feel that the partner is worried about same issues, and that his actions are guided by similar norms	It is important to feel that the partner is worried about same issues, and that his actions are guided by similar norms
<b>psychological facets</b>			
- psychological safety	Individuals with experience in different functional areas feel that they really represent their company	Psychological safety and "transformational leadership" increases with duration in organization.	
- personal chemistry			Alignment of individual styles and attitudes of interacting personnel from both companies improves daily communication and the tracking of progress
<b>policy facets</b>			
- management commitment	Top management is highly committed to the relationship through assiging dedicated personnel to initiate improvement projects		Top management is highly committed to the relationships through investing heavily in infrastructure to support the daily functioning and evaluation of the relationship.
- compensation strategy			Green belts' and black belts' career paths depend on the succes of projects
- selection procedures for critical boundary spanning functions	Select persons that have worked in different areas of the company and with different suppliers, as they will have a more holistic understanding of the relationship. Avoid rotation in these critical functions.	Persons that have worked in different areas of the company and with different suppliers will have a better understanding of communication lines and political issues of both partner and own organization	Persons that have worked in different areas of the company and with different suppliers will be better in anticipating potential obstacles and identifying facilitators of change
- silent agreements			The (informal) promise of an increasing/continuing exchange volume is a necessary condition for the supplier to engage in relational innovations
- coordination of employees through focussing on results rather than process	Stimulates creativity		

## 6. CONCLUSIONS

Buyers and suppliers in a supply chain must leverage the relationships that they share to innovate rapidly and maximize the utilization of scarce capital whether it is inventory or investment in new products and processes. Absorptive capacity (AC) is an existing theoretical construct that captures the idea that firms need to invest in the ability to acquire and use knowledge external to their organization. While not originally intended to describe relational innovations arising between buyers and suppliers it provides the starting point for our construct: Relational Absorptive Capacity (RAC), defined as “the ability of a firm to recognize the value of new knowledge from a supply chain partner, assimilate it, and apply it for mutual benefit”. Like AC, the capability to innovate is located within each individual firm, because at the end of a day of collaboration with a supply chain partner, individual employees return to their place of employment to contribute their knowledge to the prosperity of the organization that pays them. Unlike AC, the outcomes of RAC benefit the dyad in that it makes both the purchaser and supplier more innovative competitors.

RAC is the result of both a stock and flow of knowledge. The number of people that interact with members of the partnering organization with the purpose of improving the relationship is evidence of a stock of knowledge. SERVICECO in that regard had a much higher number of dedicated people compared to RETAILCO. Further evidence of RAC is expressed through the flow of knowledge between individuals, groups and organizations and the number and scale of relational innovations resulting from buyer–supplier collaboration. SERVICECO in that regard had a higher number of ongoing and already finished projects than RETAILCO. The changes were incremental, but the narrow scope of the projects permitted quick results and positive reinforcement for more joint projects in the future. Thus, according to these criteria, SERVICECO showed a higher level of RAC, compared to RETAILCO.

The paper contributes by conceptualizing RAC as an extension of the existing AC theory and tying the development of the multiple learning facets to the progression through the stages of RAC. We have expanded the discussion beyond the traditional structural facet of learning to suggest more work on the cultural, psychological and policy facets to get a fuller picture of RAC and the resulting relational innovations. Our case studies lend some support for our conceptualization of RAC. The examination of the learning processes and capabilities, from both the buyer and supplier perspective, captures the interactive nature of learning as it accumulates to either partner from joint activity. Moreover, the cases provide rich empirical illustrations of learning processes and capability creation in the context of buyer-supplier relationships and thus complement existing literature situated in the context of strategic alliances.

This paper presents work in progress and further comparison between the cases and between the relationships within each case is required. A research agenda based on RAC also requires observing multiple individuals and groups in both organizations over time. Therefore, more interviews and observations are planned within the same cases. Moreover, cases from other industries will be included in this comparative case study research, in order to confirm or contrast emerging results. The potential reward is valuable insights into one of the most critical capabilities for the sustainability of rapidly changing and increasingly integrated global supply chains.

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