Discourses in retrospective relational sensemaking processes in the context of R&D offshoring

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ABSTRACT

To advance the concept of relational sensemaking, this study analyzes sensemaking in the context of R&D collaboration. Using a comparative case study methodology, we analyze longitudinal relational data collected from the R&D offshoring relationships of two large Swedish multinational companies with their R&D offshore partners. These longitudinal data consist of 40 interviews and four focus-group interviews from both sides of the relationship, in addition to secondary material. This study constructs a model of retrospective sensemaking processes in the context of R&D offshoring relationships and identifies critical incidents triggering sensemaking processes to understand how retrospective sensemaking occurs in this context. The developed framework illustrates the processes of sensemaking in the unique context of R&D offshoring relationships. Our results provide insight regarding how to coordinate offshoring relationships for improved sensemaking capacities. Thus, we extend the previous literature on relational sensemaking by drawing from the retrospective sensemaking, R&D internationalization and interorganizational network literature and by studying relational cases in the context of R&D offshoring.

Keywords: Sensemaking, offshoring relationships, R&D internationalization

Paper type: Competitive paper

INTRODUCTION

"I think we would never even have dreamt about what we could face when we launched the idea that our R&D should be distributed globally and that we should modularize and redistribute what we invent to unknown partners abroad… At times, we were all so confused and paralyzed that if we had not agreed upon what was going on, nothing would have happened" (R&D professional interviewed for Alfacorp).

To understand the critical incidents that occur in R&D offshoring relationships—a dynamic and complex context that involves rapid-paced development and innovation—it is necessary to employ retrospective relational sensemaking. A coherent understanding must be developed to ensure effective collective action to solve emerging challenges in executing R&D operations in the context of offshoring relationships in which R&D professionals collaborate across geographically remote organizations. Retrospective sensemaking occurs when professionals confront surprising and dubious events (Weick, 1993). Retrospective sensemaking is considered *a social and ongoing process* (Pye, 2005, Weick, 1995) in which "*goals are often formed after action as a kind of retrospective explanation for what people think they must have been doing*" (Gioia, 2006, 1713). Retrospective sensemaking is a process of social construction that aims to bring order to flux through interpretation and explanation. The interpretation of socially constructed reality is communicated and executed through discursive constructions (Kwon, Clarke & Wodak, 2014) that create a basis for action by providing clear answers to questions that would otherwise be considered as uncertain. In the context of R&D offshoring, sensemaking is particularly relevant.

Previous literature noting the importance of relational learning (Lin et al., 2012; Selnes & Sallis, 2003) and development (Kale & Singh, 2007; Kohtamäki et al. 2012) generally overlooks the important matter of relational sensemaking processes. Theoretical development related to sensemaking is primarily based on processes that result from individual experiences (Weick, 1993). Moreover, the few extant network studies consider sensemaking from a prospective perspective (eg. Henneberg et al., 2006, Möller, 2010, Akgün et al., 2006), whereas the traditional (Weickian) view defines sensemaking as a retrospective, ongoing and cyclical process. Finally, whereas the existing research on sensemaking has been conducted in an intra-organizational context, "*no systematic research exists within this area of linking sense-making and networking empirically, i.e. providing 'thick' descriptions about the interrelations of these two concepts*" (Henneberg, Naudé & Mouzas, 2010). As in the few existing papers that link sensemaking recent network research, sensemaking is largely described through the role of network pictures and cognitive maps in enhancing shared understanding (Ford et al, 2003, Ramos, 2008, Ramos et al., 2012, Öberg et al., 2012, Abrahamsen et al., 2012, Henneberg et al., 2006). As Colville and Pye (2010) argue, sensemaking and network pictures are analogous but not identical; network pictures may represent an overly static picture of a phenomenon. Finally, the interorganizational network literature has not yet analyzed retrospective sensemaking in the context of R&D offshoring, which is surprising considering the interactional difficulties inherent in R&D offshoring relationships. This study intends to fill that gap.

Adopting a relational offshoring perspective, this study examines *how retrospective sensemaking occurs in R&D offshoring relationships between manufacturers and their R&D suppliers.* In these relationships, professionals from different national and organizational cultures and management systems must engage with one another in retrospective sensemaking despite the separate frames of references these actors use to interpret relevant

events. By drawing from empirical data collected from 40 interviews with respect to two R&D relationships, this study contributes to the interorganizational network literature by constructing a process model of relational sensemaking in the context of R&D offshoring relationships. Our contribution is twofold: First, this study is one of the first to highlight the importance of retrospective sensemaking processes in a relational offshoring context. Second, by blending our empirical data with the previous literature, this study develops a model that facilitates understanding of the mechanisms of retrospective relational sensemaking.

RETROSPECTIVE RELATIONAL SENSEMAKING IN R&D OFFSHORING CONTEXT
Collaboration and retrospective sensemaking in the context of R&D offshoring

Interorganizational network collaboration, particularly in the R&D offshoring context, involves exchanges of complex, tacit knowledge among R&D professionals. The interorganizational network literature considers knowledge asymmetry to be one of the central challenges of R&D collaboration – ex ante, an R&D supplier is unfamiliar with the true needs of customers, whereas customers may be unaware of a supplier's competences (Kohtamäki et al. 2013; Stump et al. 2002). The problem of information asymmetry has been highlighted by a number of network approaches, particularly by the relational governance approach (Chang & Gotcher, 2007; Rindfleisch, & Heide, 1997).

Knowledge exchange in the context of R&D offshoring is influenced by contingencies such as national and organizational cultures and management systems. Even in more standardized settings that have less variety, uncertainty and knowledge asymmetry, researchers question whether relationships and networks can be managed at all (Möller & Halinen, 1999; Ritter, Wilkinson & Johnston, 2004). For instance, Ritter et al. (2004: 175) note, *"networks are not generally under the control of an individual firm but are self-organizing systems, in which order emerges in a bottom–up fashion from the local interactions taking place among firms in the relationships in which they are involved"*. This line of network interaction research suggests an emergent characteristic of activities that can be understood from a sensemaking perspective across organizational boundaries. Thus, the current debate regarding the manageability of interorganizational networks suggests that the arbitrary nature of interorganizational behavior is influenced by environmental interpretations on both sides of the relationship (Håkansson & Ford, 2002). When these relational insights hold true—particularly in the context of R&D offshoring—the concept of retrospective relational sensemaking is particularly relevant.

Defining retrospective relational sensemaking

This study suggests that ongoing R&D activities in relationships can be described as negotiated orders for ambiguous work that are enacted among the organizational partners involved (Weick, 1979). In recent network studies, the sensemaking process is viewed as a prospective model for enhancing shared understanding in areas such as innovation strategy (Wei & Wang, 2011) or relational learning (Lai et al., 2009). However, this study builds on process theory (Weick, 1979, 1995), which defines sensemaking as a retrospective process of interactions and interpretations that are undertaken in ongoing dialogical discourses in an attempt to make sense of the surrounding world and to set the basis for roles and responsibilities (Gebhart, 1993). Sensemaking is understood as a continuous and retrospective process in which action is not driven by sense; instead, sense is guided by action

and a retrospective understanding of that action (Weick, 1995, Gioia, 2006). Sensemaking feeds relational development because *"sensemaking makes organizing possible"* (Weick, 2001, 95). Organizational sensemaking is realized through collective communication, interpretation and meaning-shaping in relationships among R&D partners (Giddens, 1984). Reality and created accounts of the interpretation of reality—in which sense is made—requires organizational structures to govern responsibilities, expectations and roles (Berger & Luckmann, 1966). The role of relational structures has been highlighted in the prior interorganizational literature (Kohtamäki, Vesalainen, Henneberg, Naude & Ventresca, 2012).

Relational sensemaking involves the relationship between a manufacturer and its R&D offshoring partner, in which sensemaking takes place as a dual, cyclical and ongoing process of sense reading and sense 'wrighting', a retrospective explanation of what people think they should have been doing (Gioia, 2006; Weick, 1995). Joint understanding then feeds back into relational routines, rituals, norms and beliefs. Therefore, relationships provide an interactive platform for sensemaking by facilitating the enactment, shaping and implementation of knowledge because relational studies understand relational structures as platforms that host interaction (Kohtamäki et al. 2012; Selnes & Sallis, 2003).

Phases of retrospective relational sensemaking and differences from the previous research

This view of sensemaking as a retrospective process led us to analyze how sensemaking is executed in the research context under study. Prior research highlights the necessity of sensemaking in pressure situations in which tightly knit groups of actors operate in close interaction (Weick, 1995). The relational sensemaking process that we observed springs into action when discrepancies and equivocality in ongoing projects interrupt normal action and act as a **trigger** to sensemaking and its first phase, *enactment* (Weick et al. 2005). Enactment consists of noticing and bracketing peculiar, equivocal events or issues and inventing new potential interpretations *"for something that has already occurred during the organizing process, but does not yet have a name, has never been recognized as a separate autonomous process, object, event"* (Magala 1997, p. 324). Whereas noticing refers to deviation from the normal situation in ongoing projects, bracketing reflects the need to transform the flux of circumstances into the orderliness of situations (Weick, 2005). Together, these mechanisms produce potential perceptions of the trigger that enables selection from an array of potential interpretations.

The second phase of the sensemaking process, *selection*, aims to generate common ground by labeling and categorizing those phenomena that *"have to be forcibly carved out of the undifferentiated flux of raw experience and conceptually fixed and labeled so that they can become the common currency for communicational exchanges"* (Chia 2000, p. 517). Categorizing and labeling reduces possible interpretations through the use of retrospective attention, mental models and articulation to generate a locally plausible story (Tsoukas and Chia 2002, p. 573; Weick et al. 2005). Selection reduces the number of interpretations for retention when a final interpretation is made and learning is enabled.

The situation gains further solidity in the third phase of the sensemaking process, *retention*. *"A situation is talked into being through the interactive exchanges of organizational members to produce a view of circumstances including the people, their objects, their institutions and history, and their siting in a finite time and place"* (Weick et. al., 2005). In the process of

retention, interpretation is connected to experience and can thus be used as guidance for forthcoming action and understanding (Weick, 1969).

In summary, we consider retrospective relational sensemaking to involve both conversational and social practices that occur verbally and non-verbally (Gephart, 1993, Gioia & Chittipeddi, 1991). Practices "*are a means of doing in which organizing is constituted, rather than static concepts or objects to be employed*" (Jarzabkowski & Spee, 2009, 82). "*Practices involve the various routines, discourses, concepts and technologies through which this strategy labour is made possible*"(Jarzabkowski and Whittington, 2008, 101). Organizational action and sensemaking are in continuous interaction because management continuously constructs and reconstructs organizational actions and strategy through sensemaking processes (Giddens, 1984). This study highlights and analyzes the specific accounts and actions that occur in retrospective sensemaking practices in the context of R&D offshoring relationships.

METHODOLOGY
Research setting

The present paper employs a qualitative study methodology to address its research questions. This research built on data from two Swedish multinational manufacturing companies and their two service suppliers in India. Alphacorp is a worldwide industry leading construction equipment provider that offers products and services to customers from diverse industries (e.g., mining, road construction, utilities, etc.) in more than 100 countries. Its product range includes wheeled and crawler excavators, articulated haulers, scraper haulers, wheel loaders, milling equipment, and a range of compact equipment including mini loaders, mini excavators, and others. In 2010, Alphacorp had approximately 13,000 employees and annual turnover of €1.225 million (2010). Delphitech is an Indian multinational provider of information technology services, business support services and advanced engineering solutions. It offers services to customers from 49 countries and reported revenue of €1.9 billion and 83,000 employees in 2013.

Betacorp is a large developer and manufacturer of components for both civil and military airplane engines, rocket engines for space applications and gas-turbine engines. On the civil aviation side of its business, Betacorp offers products and services to all major engine manufacturers, including GE Aviation, Rolls Royce, and Pratt & Whitney. With approximately 3,500 employees and turnover of €209 [1] million in 2010, Betacorp is considered a specialized component provider with global operations. Alpinetech is an India-based global IT service provider that offers software consulting, enterprise transformation, remote infrastructure management, engineering and R&D services and business process outsourcing (BPO). It offers services to customers from 26 countries and revenue of €3.6 billion and 88,000 employees.

Alphacorp and Betacorp and their relationship with Delphitech and Alpinetech, respectively, were selected as case objects because this selection represents the early movement of customers into the BRIC countries and because their R&D offshore activities are relatively

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[1] MSEK 1,910 is equivalent to EURO €209 million based on the exchange rate as of January 1, 2011.

developed. Moreover, these companies have distinctive characteristics that could provide a high level of insight for the broader population of companies interested in advanced engineering services and R&D offshore activities. Driven by globalization and increasing competition, both customer companies had established offshore collaboration units in Bangalore, India during the early 2000s. They acquired R&D services from two different suppliers based on their competences and specialties, such as calculation or prototype designing.

Although the dominant focus of most large multinational companies has been on offshoring information technology and back-office business processes, there has recently emerged a third major service growth stream related to offshoring advanced engineering services and R&D activities (Nasscom report, 2006). According to Manning et al. (2008), this shift requires research attention and represents the next generation of offshoring practices. This service category includes a wide spectrum of high-value services, such as CAD drawing, modeling and drafting; reengineering; embedded-system development; new-technology development; research on new materials and services; prototype design; and product development (Booz & co report, 2007). The characteristics that differentiate these types of services from low-value offshore services are their more demanding requirements related to reliability and quality of work, the need to develop new ideas and concepts and the requirement of advance knowledge related to products, processes and tools. This study is specifically interested in investigating such next-generation practices related to diverse relational challenges, calling for engagement with retrospective relational sensemaking activities.

Research Approach and Data Analysis

We adopted an inductive and exploratory multiple-case-study research design (Eisenhardt, 1989) because we wanted to gain rich data on the studied phenomena. Moreover, this approach enables us to provide details not only regarding the benefits associated with offshoring advance engineering and R&D activities but also regarding the possibility of performing a cross-case analysis to learn about generalization possibilities (Yin, 2003). The advantage to such an approach is that it facilitates presenting and detecting the underlying dynamics of such situations (Siggelkow, 2007). In total, 40 interviews and four focus group interviews were undertaken during the various stages of data collection.

Figure 1 depicts the three steps of the empirical study. First, we focused on understanding the challenges associated with early-stage R&D offshoring and what actions were undertaken to mitigate those challenges. For this purpose, we conducted 22 explorative interviews (12 Alphacorp respondents and 10 Betacorp respondents) at seven prominent global offshoring sites operated by the two customer companies because we wanted the input of the interviewees to generate exploratory data. Moreover, because few studies have investigated the effects of advance engineering and R&D offering work, we expected to find a different set of challenges for the offshoring activities that were the focus of our study compared to traditional (e.g., information technology) offshore activities. The respondents in this phase were managers and had been part of the teams that had been developing their companies' initial offshore collaboration.

During the next step, we collected data from the two R&D services supplier companies, inquiring about their perspectives on R&D offshore challenges and what joint actions they had taken with their customers to manage the collaboration. This resulted in 18 interviews at

Alpinetech and Delphitech—nine from each company. The respondents were selected from both managerial (e.g., group leaders and collaboration initiators) and operational (e.g., team leaders and members) levels because respondents from those levels could provide examples of their experiences working with offshore customers from different perspectives. Finally, we conducted four focus-group interviews (2 at Alphacorp and 2 at Betacorp) that involved 20 respondents with managerial and operational backgrounds. These focused interviews attempted to verify and validate the relationships and patterns related to offshore sensemaking activities over the course of the two R&D offshore collaborations.

The length of the interviews ranged from one to three hours, with the average interview lasting one and a half hours, whereas all four group interviews lasted three hours. To ensure reliability, most of the interviews (i.e., 80%) were conducted by multiple investigators, which both increased the probability of obtaining unexpected results and ensured confidence in the results. All the interviews were recorded to further ensure reliability and to ensure that no important points were missed during the discussions. The interviews were transcribed within 24 hours and were then discussed within the group to identify patterns and/or themes (Nag et al., 2007). Secondary data were also collected throughout the data collection period, either in the form of observations or archival data. We also attended and observed several operational and strategic meetings at the case companies. Observations and reflections during interviews were also integrated into the interview transcriptions for further analysis. Different forms of archival sources were used during different phases (see figure 1). In particular, offshore pre-study documents, intranet pages, Internet websites, offshore growth progress documents, published news articles, internal documents and internal company presentations by senior managers were also analyzed to obtain an empirical triangulation of the offshore collaboration process.

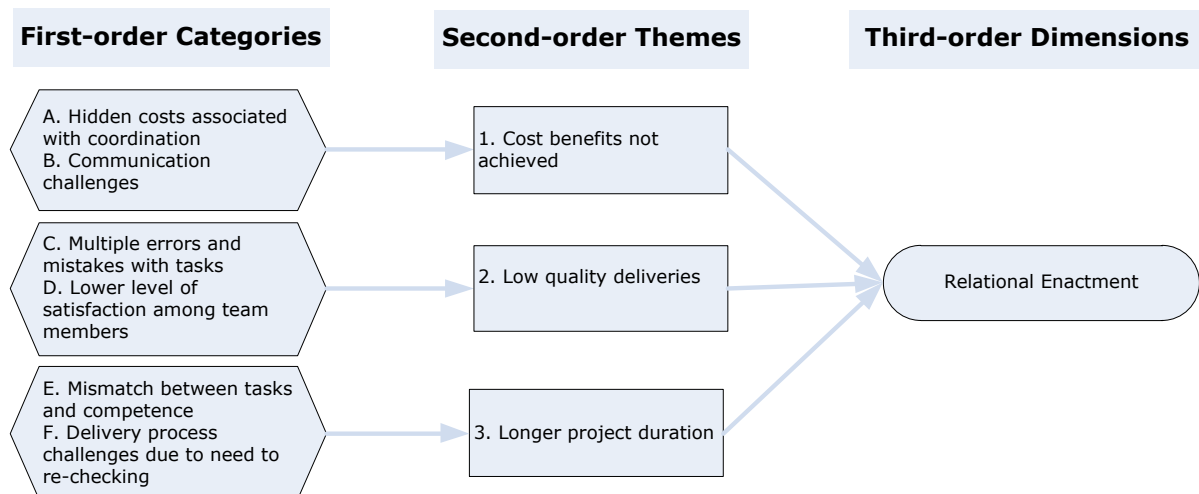Figure 1: Overview of this study's data-collection efforts.

	Step I	Step II	Step III
Perspective	Customer perspective	Supplier perspective	Customer perspective
Phase Focus	Understanding early R&D offshoring challenges and potential action for mitigation	Understanding early R&D offshoring challenges and potential action for mitigation	Verifying and validating R&D offshore sensemaking activities
Data Collection Method	Exploratory interviews	Exploratory interviews	Focus group interviews
Respondents	22 interviews -12 Alfacorp - 10 Betacorp - Managerial level	18 interviews - 9 Delfitech - 9 Alpinetech -Managerial and operational levels	4 group interviews - 10 Alfacorp -10 Betacorp - Managerial and operational levels
Archival Sources	Offshore pre-study documents, intranet pages and Internet Web sites	Offshore pre-study documents, intranet pages and Internet Web sites	Internal documents and internal company presentations by senior managers

Data Analysis

We adopted data-analysis methods that are based on constant-comparison techniques (Strauss and Corbin, 1990; Nag et al., 2007). This approach provides the capacity to identify patterns within a large, complex data set. Moreover, it also provides a method to effectively and accurately find linkages within analytical themes. The data analysis emphasizes the need for a series of iterations that lead to different themes and overarching dimensions for developing theoretically and empirically grounded frameworks. In the following section, we attempt to describe the sequence of actions taken during data analysis.

In our initial step, we began coding the data and documents using common words, phrases, terms or labels provided by our respondents. This formed the basis for our first-order codes (Van Maanen, 1988). As suggested by Nag et al. (2007, p.828), "we then reread each interviews several times, each time marking phrases and passages that were similar to and different from each other, to discern similarities and differences among" respondents. These first-order codes were recorded in the exact language used by the respondents to express their views. Once certain patterns within these codes were visible, they formed the basis for first-order category development, which mainly refers to retrospective relational sensemaking in context of R&D offshoring.

Figure 2: An example of the constant-comparison technique

First-order Categories	Second-order Themes	Third-order Dimensions
A. Hidden costs associated with coordination B. Communication challenges	1. Cost benefits not achieved	
C. Multiple errors and mistakes with tasks D. Lower level of satisfaction among team members	2. Low quality deliveries	Relational Enactment
E. Mismatch between tasks and competence F. Delivery process challenges due to need to re-checking	3. Longer project duration	

The next stage focused on analysis of the first-order categories, which led to the identification of patterns and linkages within those categories. These identified links consisted of theoretically distinctive groups, which were regarded as second-order themes. Our analysis resulted in thirteen second-order themes, which are formed at a higher abstraction level compared to the first-order categories. In accordance with received validity claims from the literature, these themes were further refined based on the interplay between data from interviews and secondary sources, such as internal documents, presentations, newspapers, etc.. Moreover, internal validity tests were conducted to ensure greater accuracy within the

emerged themes, which was achieved by means of e-mail correspondence and follow-up discussions with selected respondents. The final step involved generating more abstract third-order dimensions. These four overarching dimensions were generated through the analysis of second-order categories. Figure 2 shows an example of our coding approach, which highlights different phases of the relational sensemaking process during the early stages of two R&D offshore relationships. These steps enable us to create an empirically driven theoretical framework that links various phenomena that emerged during the data analysis.

RESEARCH FINDINGS

In the relationships we studied, we observe that strong relationship governance is difficult to obtain and the actions that occur in a relationship can be understood by referring to the dialectical process between sensemaking and social structure. In short, we notice that retrospective sensemaking accounts for what are frequently called discursive constructions of the reality-enabled formation of social structure (Weick, 1993). Although we find similarities to phenomena mentioned in the sensemaking literature, a closer examination of this literature reveals that the relational sensemaking process is more iterative than those cases typically described in the sensemaking literature, such as cases of fires, industrial disasters and other stressful situations. We also observe that geographical distance creates unique accounts that are more objective and observable than those discussed in the retrospective sensemaking literature. That said, the generic underlying sensemaking process that we observed has clear similarities to those processes discussed in the previous literature.

The relational sensemaking process

This study constructed a model of retrospective sensemaking processes in the context of R&D offshoring relationships. By analyzing a variety of R&D offshoring relationships, we identify critical incidents that trigger sensemaking processes to deepen our understanding of how retrospective sensemaking occurs in the context of R&D offshoring relationships. For our case companies, we find that low relational performance and satisfaction in the early stages of such relationships trigger relational sensemaking, and we observe that relational enactment, selection and retention occur as a variety of actions and conditions are undertaken.

We find that the relationships we studied did not initially perform as expected and that the customer companies' observations trigger relational sensemaking processes. During the enactment phase, project costs were not reduced as expected, the quality of operations was low, and the duration of the projects was longer than expected. The next phase of selection provides multiple reasons for low relational performance, including a lack of operational processes and experience in offshore settings, differences in the parties' cultures and approaches to work, the revised role of employees and challenges in knowledge transfer. Finally, learning from previous phases is retained through efforts related to benchmarking, documentation and internal communication.

Table 1. Findings related to relational sensemaking processes.

Sensemaking process	Findings
Trigger Unexpected event	▪ Low R&D performance and satisfaction
Relational enactment Noticing and bracketing	▪ Cost benefits of using offshoring resources not achieved ▪ Low-quality deliveries ▪ Duration of the projects was longer than expected
Relational selection Labeling and categorizing	▪ Lack of operational process and experience to operate in offshore setting ▪ Cultural differences and variety in work approach between partners ▪ Revised role for project members ▪ Challenges in knowledge sharing and transfer
Relational retention A situation is talked into being	▪ Enhanced relational interaction ▪ Joint problem solving ▪ Reporting and documentation ▪ Cross-cultural awareness programs

Triggering relational sensemaking

Weick et al. (2005) highlights that "*explicit efforts at sensemaking tend to occur when the current state of the world is perceived to be different from the expected state of the world*". Originally, one of the primary expectations related to the decisions to offshore R&D activities from Sweden to India was cost savings. Thus, the inability to achieve those savings alerted responsible managers, particularly on the customer side, that the need to achieve the previously set targets was particularly important:

> "*Cost savings have been the key reason to engage in R&D offshoring. Top management agreed that this manner of organizing R&D tasks was necessary because of increasing competition*".

Many Alphacorp and Betacorp managers considered R&D offshoring to be a means of maximizing limited financial resources:

> "*We have been very enthusiastic about R&D offshoring. It would enable us to expand our R&D efforts into more strategic and future-oriented activities*".

In its early stages, the relationship failed to deliver the expected results. Moreover, because this was the first time that either Alphacorp or Betacorp had engaged in R&D offshoring, their efforts were questioned:

"The early years of collaboration have been challenging for all of us and for our suppliers. Most of our projects failed to reach the goals we set for them. This created chaos within the organization, which took us by surprise".

Relational enactment

In the *enactment* phase of the sensemaking process, customer companies monitoring their relationships noticed and bracketed deviations from the expected. On the customer side, managers noticed that project costs were not reduced, contrary to expectations. Although the goal of R&D offshoring was to reduce costs by 50%, the real cost reduction was only 20%. Quickly, managers determined that this failure was initially caused by hidden costs associated with coordination, reworking and delivery delays:

"Most R&D projects that involved offshore resources ended up with high costs. For example, project leaders spent much more time on communicating tasks among team members. These unplanned administrative and communication cycles resulted in much lower savings than what was initially predicted by project managers".

In addition, there were multiple errors and a large amount of rework was required, which led to low quality and low levels of satisfaction with the R&D relationships.

"Although offshore resources were skilled, they lacked knowledge of our products and processes. They took their time learning and made several mistakes along the way, which led to an increased number of iterations and the need to rework".

In most cases, project durations were longer than expected:

"We knew little about our offshore resources and there was often a mismatch between the correct person and the correct job. This added time to explaining tasks and caused deliveries to be delayed".

"The initial stage of collaboration resulted in several coordination challenges, such as delays in deliveries".

During this process, managers noticed the problems, identified multiple reasons for those problems and packaged those reasons to potentially combine those issues. That is, managers noticed and bracketed both the problems and the reasons for those problems and began "*to change the flux of circumstances into the orderliness of situations*" (Weick et al. 2005).

Relational selection

To generate a common understanding in the relational sensemaking process, the number of possible explanations in the selection phase is reduced to clarify the problem and reasons behind it. At this phase, differences among actors are ignored and links are created to label the reasons for credible and acceptable stories. When analyzing and interpreting managers' language regarding the reasons for low relational performance, managers selected and labeled parallel reasons that affected performance. Tentative and provisional explanations for low R&D performance included the absence of operational processes, cultural differences,

different work approaches, the revised role of employees and challenges related to knowledge transfer.

In our interviews, managers explained that missing R&D performance targets were the result of a *lack of operational processes*. They explained that despite their experience in working with offshore partners, specific offshore collaboration-oriented processes, routines and roles were frequently missing. This may have resulted from the physical and cultural distance between the parties, which made it difficult to conceive of joint processes that would be followed. Process description would also explicate misaligned processes and a lack of structural integration between the two partner companies, which would emphasize the need for improved collaboration. At the individual level, employees must cope with different working styles and approaches based on the customers' offshore executives with whom they interacted. Managers indicated that many activities were performed in an ad-hoc manner:

> *"The current processes followed are highly individual, such that they lead to too much freedom for the offshore engineers instead of a very concrete and defined work path. Therefore, we essentially need to straighten out our internal offshore processes and start to produce similar functional work packages every time".*

Moreover, due to the lack of offshore processes and routines, offshore executives are generally faced with an increased workload, which causes problems with and restrictions on their work roles. Among other things, in our case study, most executives continued to shoulder on-site responsibilities while also coordinating offshore unit resources. In most cases, on-site executives were experienced engineers, which meant that several project managers demanded their attention and they typically were working on several projects simultaneously and led to a limited amount of time available to reply to emails or make phone calls to the offshore unit. Such an ineffective approach to R&D and advanced engineering offshore work is problematic because managing these issues requires complex skill sets and employees' full attention.

The studied companies labeled communication challenges that were categorized as *cultural differences and variety in work approach between partners*: an offshore setting inherits pre-existing challenges related to cultural diversity. Although we could provide several examples, we highlight only a few. For example, when transferring R&D work, several interviews reveal that Indian engineers are frequently more team-oriented than Swedish engineers, who are individual-oriented, which also indicates that Swedish engineers require lower levels of interaction and control, whereas Indian engineers favor regular interaction and constant approval.

Moreover, it appears to be accepted knowledge that Indian engineers "fear losing face", i.e., they fear making mistakes or asking for clarification. This is counter-intuitive to most Swedish engineers, who have a working approach that is more independent and direct. Indian engineers are also better at following processes and addressing matters according to hierarchical levels. An aerospace-industry manager confirms the following:

> *"Of course, there are differences in culture. For example, we are not aware when they have holidays and we expect them to work on those days.*

...they don't dare to make mistakes; as engineers we expect them to draw their own conclusions and come up with ideas".

Our studied companies believe that such differences related to organizational culture lead to underestimating the complexities in development work, which leads to mistakes and problems with meeting deadlines.

Project members' revised roles are labeled as one explanation for low performance. The success of R&D and advanced engineering offshore collaboration largely depends on the ability of onsite managers and offshore executives (i.e., coordinators) to work effectively in a globally dispersed team.

"The challenge that we face is that the people here [i.e., on-site] have always been accustomed to communicating easily, asking questions over the wall and working on problems together".

This view is shared by most engineering companies because they have been challenged when attempting to offshore development and complex tasks to BRIC countries. Furthermore, many engineers assigned to be offshore contact persons (i.e., offshore executives or coordinators) typically are competent engineers but may lack the managerial and leadership abilities to manage global teams. Therefore, when top management "pushes" the decision to offshore R&D work, there is a lack of "pull" at the operational level due to a deficiency in the internal capability to support offshore initiatives. This challenge is structurally built into most engineering companies because their recruitment strategy focuses on certain types of engineers who may not be suited to working in globally dispersed collaboration.

Tools, process, and product knowledge is necessary to perform R&D and advanced engineering offshore tasks effectively. *Challenges in knowledge sharing and transfer* were labeled as a central reason for low relational R&D performance. The task of sharing and building this type of advanced knowledge with an offshore unit thousands of miles away was identified as challenging. Offshore employees typically possess tool knowledge because most multinational engineering companies use standard tools for development work. However, building process and product knowledge require more effort and a longer time. Even when most offshore unit engineers have a few years of experience at other companies in a similar industry, internal processes and routines tend to be company-specific. Similarly, product knowledge is particularly important and complex because building this knowledge depends on a learning-by-doing approach. According to an offshore manager,

"When someone starts to work here [on-site], the person can go to the machine floor, look at the machine and see the implication of his or her designs for the final product. That person can also talk with operators and get their feedback. These types of information and knowledge cannot be sent to the offshore unit employees".

Another inherent problem related to knowledge-sharing and -building is linked to a lack of knowledge and information flows among team members. Frequently, decisions are made on-site but are not clearly and timely communicated to offshore employees. This informal knowledge exchange is important because it may provide the rationale for why certain materials are used or why the dimensions of engine design must be revised. One team leader from Mahindra Tech Services reports,

> *"We usually get detailed information about our specific task but we don't understand the bigger picture".*

These discussions and information are typically exchanged over a "coffee table", i.e., informally, which makes it almost impossible to disseminate it to offshore unit engineers. Securing the flow of this type of informal knowledge sharing is challenging but nonetheless important.

Relational retention

In the process of sensemaking, selected explanations remain tentative and provisional until the final phase of sensemaking, *retention*, in which a story gains further solidity (Weick et al. 2005). In our case, companies retain their new understandings and transform them into relationships via onsite visits, regular meetings, joint problem solving, documentation and cross-cultural awareness programs. Retention enables a plausible story to become more solid and to be used as a source of guidance for <u>further</u> action and interpretation (Weick, 1969).

Based on our data, in the R&D relationships we studied, interaction is enhanced to integrate new knowledge into current relational operations. Retention is decisive to achieve further understanding.

> *"This was a trial-and-error approach and we retained those processes that worked and abandoned those that did not. For example, hours calculations were based on joint discussions rather than on one-way instruction from on- to offshore sites".*

Enhanced relational interaction is required to integrate knowledge. To facilitate relational interaction, site visits and regular meetings are utilized. Onsite visits are considered a means to improve knowledge integration by gaining an understanding of the partner's processes. Understanding relational processes facilitated the development of more effective processes to improve relational R&D performance.

> *"Onsite visits have been the most effective way to build a better understanding of our offshore resources and their approach to work. When our engineers meet them and have personal interactions, we learn much more about their way of working. Such visits have also been helpful in building trust and commitment between team members".*

Furthermore, both intra- and interorganizational meetings are required to facilitate knowledge integration. The prior relational literature highlights the importance of various relational interaction platforms, such as relational team meetings (Kohtamäki et al. 2012).

> *"There is a much greater need for regular meetings when developing something novel. Therefore, our team spends 15 minutes every day to quickly ensure that all tasks are progressing as planned, and clarifications to offshore resources are promptly provided on a regular basis".*

Similarly, *joint problem solving* processes facilitate finding solutions to relational challenges. Whereas meetings serve as a platform for interaction, joint problem-solving processes

activate creativity and knowledge integration. Through these processes of joint problem solving, relational team members develop shared knowledge structures. The current literature highlights the importance of these types of procedures (Dyer & Hatch, 2004):

> "*To build better working relationships among team members, we experimented with joint problem-solving sessions. This involves team members working virtually on a similar, challenging problem and jointly exploring ways to find a solution. This approach helps inexperienced offshore resources learn more about the project problem and provides on-site resources with insights into how offshore resources approach complex problems*".

Reporting and documentation are also identified as an important practice that enables the integration of knowledge into relational structures:

> "*All the team leaders who have visited offshore sites were asked to prepare a diary of their experiences. This information was internally shared to enhance the understanding of offshore resources and their working environments*".

> "*Offshore teams leaders are also encouraged to meet on a regular basis to discuss their experiences. This is very helpful for new team leaders because they receive firsthand input—do and don'ts—on how to improve R&D offshore relationships*".

Because our case companies label differences in organizational culture as a central reason for low R&D performance, they utilize *cross-cultural programs* to increase cultural awareness and to ensure effective offshore operations.

> "*A task team was created to identify ways to improve our R&D offshore collaboration. This team includes experienced line managers and project managers that explore several ideas for improvement. This has been helpful for our internal learning*".

The following figure summarizes the findings related to the trigger and the relational sensemaking process of relational enactment, selection and retention.

Figure 3. Findings related to the relational sensemaking process.
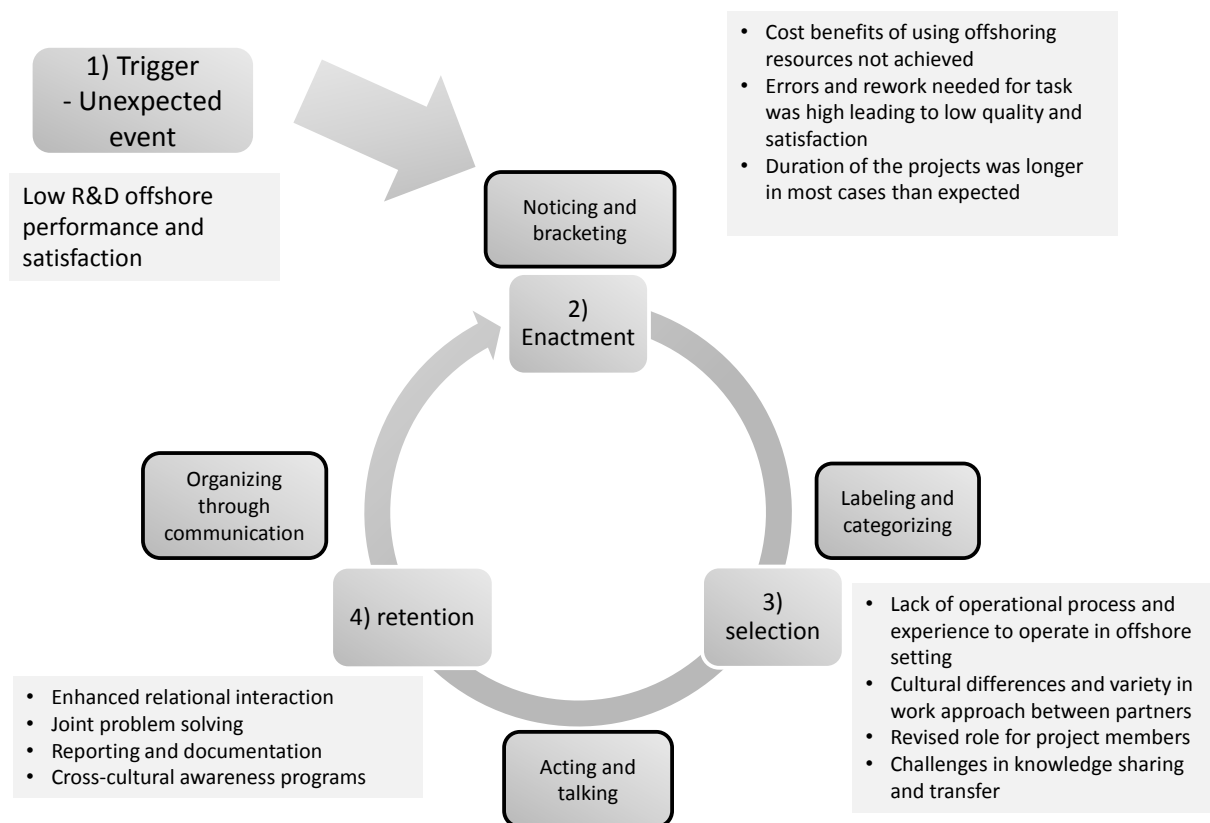
DISCUSSION

Theoretical contribution

This study develops theory on retrospective relational sensemaking by drawing from retrospective sensemaking, R&D internationalization and interorganizational network literatures and studying two real-world relational cases of R&D offshoring relationships. Extending the existing interorganizational studies applying a prospective sensemaking approach, (eg Ford et al., 2003, Ramos, 2008, Henneberg et al.,2006), this study considered sensemaking as a retrospective process by studying its three phases in the context of R&D offshoring. Our contribution is twofold: First, this study is one of the first to highlight the importance of retrospective sensemaking processes in a relational offshoring setting. Second, by blending the observed empirical data and the literature, this study develops a model that facilitates an understanding of the mechanisms of retrospective relational sensemaking. Thus, the present study responds to calls for further research on network-level sensemaking (Henneberg et al., 2010) by developing the construct of relational sensemaking and thus extending the literatures on relational learning and development.

The developed framework illustrates the processes of sensemaking in the unique context of R&D offshoring relationships. Our results provide insight regarding how to coordinate offshoring relationships for improved sensemaking capacities. Sensemaking capacities are central to complex environments such as R&D offshoring, in which learning from emergent actions should occur: *"Sensemaking involves turning circumstances into a situation that is*

comprehended explicitly in words and that serves as a springboard into action" (Weick et al. 2005: 409).

The present paper contributes to the interorganizational network literature by initiating the concept of relational sensemaking. From the relational data, the study identifies mechanisms based on Weick's theory of retrospective sensemaking. Triggered by an unexpected event, mechanisms are identified based on the dimensions of enactment, selection and retention.

Relational enactment references the phase in which central problems were noticed and bracketed: project costs were not reduced as expected, the quality of operation was low, and project durations were longer than expected. In the selection phase, the central explanations were labeled and categorized: the lack of operational process and experience operating in offshore settings, differences in culture and work approaches between partners, employees' revised roles and challenges in knowledge transfer. Finally, in the retention phase, in which the developed new knowledge is talked and acted into existence, several means of solving challenges were identified in the studied case relationships: enhanced relational interaction, joint problem solving, documentation and cross-cultural awareness. These are suggested as the means to solving the challenges of interaction in offshoring collaboration.

Sensemaking is found to be particularly relevant in the context of the vast knowledge asymmetries that are present in the early stages of R&D offshoring relationships. The developed framework provides fruitful ground for further research and managerial action.

Managerial implications

The developed framework is managerially relevant because it provides dimensions for reflection and for the development of relational sensemaking as an important mechanism that regularly occurs in R&D offshoring relationships. Increasing awareness of relational sensemaking is particularly relevant in contexts with vast knowledge asymmetries, such as the R&D offshoring setting. The facilitation of sensemaking is central to relationships because sensemaking enables learning from events and potential directions for taking corrective actions. Thus, we propose that the importance of sensemaking is relevant and critical to both managerial and operational levels of action.

Limitations and suggestions for further research

Like every study, this study is not without limitations. Obviously, this study is based on interesting relational case data, which is by no means generalizable. Overall, generalizable data collection from a rich phenomenon such as sensemaking may be particularly difficult to realize. However, future research may seek ways to operationalize a maturity model and a measurement method, both of which might be used for research on R&D relationships. Certainly, there is a need for both. In addition, further comparative case studies are required to enrich the empirical understanding of this phenomenon. This study used Weick's model on retrospective sensemaking. Perhaps future research could tap into other frameworks and develop them in the context of interorganizational relationships and networks. To date, only a few studies have considered sensemaking in the context of interorganizational relationships and networks. Finally, as this study has focused on sensemaking processes during early stages of collaboration, further research could analyze the sensemaking that occurs in subsequent stages of relationships.

CONCLUSIONS

Adopting the sensemaking perspective in the context of relational R&D offshoring and using a comparative case study methodology drawing data from 40 interviews from both sides of the relationship, this study constructed a model of a retrospective relational sensemaking process in the context of R&D offshoring relationships. We identified critical incidents that triggered sensemaking processes alongside sensemaking practices in different dimensions of enactment, selection and retention. This study extends the previous literature on relational sensemaking by drawing from the retrospective sensemaking, and R&D collaboration literatures. The developed framework provides an opportunity to analyze and develop processes in which a common understanding is required.

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