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Sensemaking, sensegiving and absorptive capacity in complex procurements

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ABSTRACT

This study explores and describes i) the nature of knowledge exchange processes at the frontline employee (FLE) level and ii) how FLE sensemaking processes affect buyer firm knowledge management practices in complex procurement contexts. The study utilizes an in-depth case analysis in the mining industry to identify a taxonomy of four buyer sensemaking investment/supplier collaboration profiles, to describe three sensegiving supplier roles ("confidence builders", "competent collaborators", and "problem-solvers") and to explore how these evolve during complex procurement implementation. The study concludes with a conceptual model of the apparent linkages between sensemaking, sensegiving and buyer firm absorptive capacity in complex procurements. This study shows how micro-level (FLE) interactions influence macro-level knowledge integration (absorptive capacity) in the buyer firm. For managers, the study shows how the allocation of time and resources affects FLE-level knowledge exchange, with ultimate effect on buyer firm absorptive capacity.

1. Introduction

Complex procurements involve the acquisition and integration of technically sophisticated products and services (Brown and Jones, 1998; Chen, Law, and Yang, 2009). Common in industries such as mining, construction, manufacturing, information technology and infrastructure, the buyer firm generally seeks overall improvements in their capabilities from complex procurements (Brady, Davies, and Gann, 2005; Flowers, 2004, 2007). Many of these outcomes rely on interactions between highly skilled frontline employees (FLEs) acting on behalf of exchange partners. These interactions aid in knowledge transmission and creation and, ultimately, produce the innovations, the creativity and the adaptability necessary to ensure successful outcomes (Andersen, Kragh, and Lettl, 2013; Levin, Thaichon, and Quach, 2016). In many cases, however, knowledge exchange processes are either unsuccessful or only partially successful (Reich, 2007; Shore, 2008). The persistence of these outcomes has led to speculation as to the causes of ineffective knowledge exchange in complex procurements (Reich, 2007; Shore, 2008).

Previous studies suggest that FLEs are more likely to share knowledge if they have sufficient motivation, skills and experience (Cadwallader, Jarvis, Bitner, and Ostrom, 2010; Wang, Wang, Long, Hou, and Ching, 2015). However, it is necessary for the behaviors of FLEs on both sides of the buyer-supplier dyad to complement each another (Brach, Walsh, Hennig-Thurau, and Groth, 2015). This can be difficult if FLEs have strong psychological associations with their own

firms (Korschun, 2015), and if the culture of the firm is not conducive to knowledge sharing (Grabher, 2004). Complementarity is also important at the inter-firm level. Resource and systems compatibilities are necessary for productive inter-firm knowledge exchange (Ho and Ganesan, 2013; Vanpoucke, Vereecke, and Boyer, 2014; Vargo, Maglio, and Akaka, 2008). Despite acknowledgement that both micro and macro level dynamics are important, few studies consider the interactions between these levels of analysis, particularly for complex procurement scenarios (Lewin, Massini, and Peeters, 2011; Mattsson, Corsaro, and Ramos, 2015; Robertson, Scarbrough, Swan, and Scarbrough, 2003).

The central purpose of this study is to understand how FLE cognition affects task-related learning in complex procurement contexts and, as such, the study responds to calls for research in this area (Henneberg, Naudé, and Mouzas, 2010; Mattsson et al., 2015). The findings begin with a taxonomy of FLE profiles according to buyer firm sensemaking investment (i.e. allocations of time, effort and resources towards interpreting supplier information) and supplier collaboration approach. In this, we argue that complexity affects sensemaking activities relative to the degree of buyer-supplier engagement at the dyadic level. These findings extend the view that social integration mechanisms allow development of shared meanings (Peters, Pressey, and Johnston, 2016) by identifying two sorts of "levers" available to partner firms – buyer sensemaking investments and supplier collaboration approach – and by describing the implications of four different combinations of these mechanisms.

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Earlier studies suggest that networks are formed by the views of the involved actors (Ellis and Hopkinson, 2010; Gadde, Huemer, and Håkansson, 2003; Leek and Mason, 2010). Despite this, the roles of actors as *sensegivers* in this process receives little attention. Our next set of findings reveal three sensegiving roles that supplier firm representatives adopt during complex procurements: confidence-builders, competent collaborators, and problem-solvers. This finding supports a theorization about the effects of value creation roles with specific reference to task-relevant knowledge creation and transfer and builds on earlier studies that demonstrate the importance of actors' perceptions of network roles when understanding network dynamics (Abrahamsen, Henneberg, and Naudé, 2012). By focusing on the sensegiving roles of supplier representatives, the study partially addresses current concerns in the service logic literature about the clarity of roles in value co-creation processes (Grönroos, 2008; Grönroos and Voima, 2013).

The final set of our findings map how complex procurement implementation stage affects the interplay between buyer FLE sensemaking and supplier representative sensegiving. While several studies suggest sensemaking is important for individuals when interpreting network change (Colville and Pye, 2010; Corsaro, Ramos, Henneberg, and Naudé, 2011; Leek and Mason, 2010), the effects of this process at the dyadic level are less clear. It appears that current views assume a situated notion of sensemaking in that actors have relatively stable identity profiles in dynamic situations (Weick, Sutcliffe, and Obstfeld, 2005) and that this helps them understand "why" and "how" networks shift (Abrahamsen et al., 2012). While this may be true, our findings suggest that role prominence differs depending on the task requirements of complex procurement implementation stage. This is consistent with changes in network position (Leek and Mason, 2010), yet ours is the first study to link this process to a specific implementation process. In uncovering this view, we develop a dynamic notion of absorptive capacity that illustrates the interplay between micro and macro levels of analysis.

The outcomes of this study highlight the importance of FLEs in supplier knowledge management practices during complex procurements. The findings draw on an in-depth case analysis of a complex procurement in the mining industry[1] and, as such, they are most relevant to FLEs and managers operating in similar contexts. For managers in buyer firms, it is clear that buyer sensemaking investments affect the absorptive capacity of the buyer firm as a whole. By not supporting sensemaking activities, the effects of complexity become acute. This is likely to produce organizational paralysis through perceptions of high task diversity, information asymmetry and environmental dynamism. Excessive sensemaking investments, on the other hand, are also counterproductive since this produces slack while also encouraging supplier opportunism (i.e. they may take advantage of the situation). From a supplier firm's perspective, the recognition that supplier firm representatives adopt different sensemaking roles, and that these contribute to different relational dynamics according to implementation stage, should allow a clearer set of decision-making cues when determining collaboration approach.

2. Literature review

2.1. Sensemaking and sensegiving in business-to-business interactions

As the primary interfaces between the firm and its environment, FLEs have two important roles. First, they are gatekeepers that determine what information to allow entry to the firm from external sources (Cohen and Levinthal, 1990; Lewin et al., 2011). Second, FLEs

also determine the format in which information enters the firm. Supply chain studies generally support the notion that FLEs act as the social mechanisms that interact with members of the firm's supplier network (Preston, Chen, Swink, and Meade, 2016; Stolze, Murfield, and Esper, 2015), with these interactions often supporting knowledge exchange processes (Liao and Marsillac, 2015; Stolze et al., 2015). Many studies adhere to the notion that this involves sensemaking, or the "… ongoing retrospective development of plausible images that rationalize what people are doing" (Weick et al., 2005, p. 409). As such, the nature of the knowledge exchange process rests with individuals. To date, however, there has been limited investigation of the process dynamics that underpin the interactions between specific individuals (such as FLEs) and the implications of these at the firm level (Henneberg et al., 2010; Mattsson et al., 2015).

When understanding sensemaking in business-to-business interactions, many studies focus on network pictures. This involves an actor interpreting their business environment through a set of subjective cues (Colville and Pye, 2010; Geiger and Finch, 2010; Holmen, Aune, and Pedersen, 2013). Importantly, network pictures help actors to simplify complex phenomena through information categorization and the application of a set of heuristics. Recent studies show that network pictures are useful when understanding key supplier relationships. Holmen et al. (2013) identify the importance of network picture complementarity across the buyer-supplier dyad. They show that the network pictures held by each exchange partner are subject to change, and that the impetus for this largely depends on how systematic or focused buyer FLEs are when pursuing new opportunities. Leek and Mason (2010) also consider the application of network pictures at the dyadic level. They show that the dimensions of network pictures largely relate to the boundaries of each network picture, the frequency of communication, and the perceptions of network atmosphere vary systematically with employee managerial level and function.

Much of the current literature focuses on sensemaking as this affects actors within buyer firms or networks more broadly. However, there are also situations where actors may want to create alternative perceptions in the minds of other actors. In this case, they engage in sensegiving – where they attempt to persuade others about the merits of an alternative viewpoint or interpretation (Gioia and Chittipeddi, 1991; Hill and Levenhagen, 1995; Maitlis and Lawrence, 2007). To this end, managers often engage in a deliberate narrative that often involves storytelling, the use of metaphors and/or through the routinization of different practices (Fiss and Zajac, 2006; Hong, Snell, and Mak, 2016; Monin, Noorderhaven, Vaara, and Kroon, 2013). It is for these reasons that sensegiving is often closely associated with organizational change. In the relatively few studies that consider sensegiving in business-to-business exchange, coopetition is the primary subject matter. Studies in this area show that sensegiving is important when senior and middle managers attempt to reconcile with the identities of competitors and cooperators and that this affects relational dynamics (Lundgren-Henriksson and Kock, 2016; Tidström and Rajala, 2016).

In this study, we conceptualize FLE-level knowledge exchange in complex procurement interaction processes as an interplay between the sensemaking endeavors of buyer firm FLEs and the sensegiving efforts of FLEs from buyer firms. In this, we focus on the practices of specific actors in their efforts to develop shared cognitions as these relate to task completion rather than network pictures in a general sense (Mouzas and Henneberg, 2015; Peters et al., 2016). Earlier studies show that complex procurement implementations are technically and socially complex enterprises that involve temporary organizational structures (Burke and Morley, 2016; Neely, 2014; Söderlund, Hobbs, and Ahola, 2014; Töllner, Blut, and Holzmüller, 2011). This context requires dynamic FLE engagement, often to complete knowledge-intensive task requirements (Aarikka-Stenroos and Jaakkola, 2012; Haas, 2006; Santos-Vijande, López-Sánchez, and Rudd, 2016). This suggest that this is a relatively unique context that provides a novel interpretative lens.

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[1] Our case centers on the design, delivery, implementation, and maintenance of a combination of units for dewatering plants. Dewatering is a part of the value chain from ore to metal, and it is focused on separating solid and liquid materials to optimize the processes in mineral slurry dewatering, process water reuse and by-product handling in metals and chemical processing as well as in industrial water treatment.

2.2. Absorptive capacity in complex procurements

Absorptive capacity, as the ability for the firm to deploy resources to undertake acquisition, assimilation, transformation and exploitation of knowledge (Zahara and George, 2002), has often been associated with superior competitive outcomes at the firm level. With high absorptive capacity, the firm is able to develop robust and unique knowledge resources that support innovation and operational performance outcomes (Ali, Seny Kan, and Sarstedt, 2016; Murovec and Prodan, 2009). Accordingly, new product launches, licenses and patents are downstream outcomes of absorptive capacity (Cohen and Levinthal, 1989, 1990; Todorova and Durisin, 2007; Zahara and George, 2002). An alternative view is also apparent. Studies of high technology implementation processes suggest that absorptive capacity relates to the ability to engage with a partner firm across the dyad (Zaheer, Hernandez, and Banerjee, 2010). Relatively few studies of this notion of absorptive capacity exist. Instead, studies tend to focus on related concepts such as resource and systems integration, knowledge sharing routines and knowledge-sharing mechanisms (Dyer and Singh, 1998; Ho and Ganesan, 2013; Nagati and Rebolledo, 2012).

Given the focus of this study, our notion of absorptive capacity relates more to the ability of partner firms to recognize valuable information, to exchange it, and to integrate it for commercial outcomes (Zaheer et al., 2010). The commercial outcomes of central interest relate primarily to complex procurement implementation. It seems that the task-related focus of knowledge exchange efforts at the FLE level will not necessarily result in an ongoing, organic contribution to firm-level dynamic capabilities. The fragmented nature of knowledge exchanges is likely to harbor multiple viewpoints and capabilities in FLEs (Grabher, 2004; Hoegl and Gemuenden, 2001; Turner and Müller, 2003). This has the potential to yield significant differences in the interpretation of phenomena. While there is some evidence to indicate a group consensus will eventually arise, it seems that this will not always be the case due to the heterogeneity of stakeholder viewpoints and the complexity of the procurement (Reiman, Shen, and Kaufmann, 2016; Roseira, Brito, and Ford, 2013; Tangpong, Hung, and Ro, 2010). Third, the knowledge-intensive context characterizing complex procurements is likely to demand adaptability and flexibility from FLEs. Previous studies highlight the uncertainty and ambiguity of complex procurements, with several studies also suggesting these environments require extensive problem-solving and customization behaviors (Aarikka-Stenroos and Jaakkola, 2012; Coelho and Augusto, 2010; Waller, 1999).

Earlier absorptive capacity theory suggests that firms rely heavily on individual employees to recognize and integrate valuable knowledge (Cohen and Levinthal, 1989, 1990; Lewin et al., 2011; Todorova and Durisin, 2007; Zahara and George, 2002). The opportunities for FLE-level knowledge exchange processes to contribute to the absorptive capacity of the firm depend on the constraints and enablers that shape this process. As Tourish and Robson (2006) suggest, these constraints likely shape the upward communications of FLEs. Previous studies show that the nature of complex procurement implementation requires time and context-specific matches between actors (Grabher, 2004; Lindner and Wald, 2011). The propensity for knowledge exchange, therefore, rests with these interactions. To date, however, there has been little consideration in the extant literature of these phenomena.

3. Methodology

3.1. Research design

To address the goals of the study, we adopted a research design that centers on theory development. Hence, we conducted a three-year case analysis of a large, Finnish mining company with global operations. A single case research design aims at understanding phenomena in detail and providing rich descriptions (Dubois and Gadde, 2014, 2002; Yin,

2009). Given this, the outcomes of our study are most relevant to complex procurement contexts. These are more likely to resemble substantial attempts for buyer firms to improve their underlying capital base. Complex procurements generally involve upgrades to plant and equipment of some kind, with these being more common in industries such as mining, construction, manufacturing, information technology and infrastructure (Biggemann, Kowalkowski, Maley, and Brege, 2013; Brady et al., 2005; Flowers, 2004, 2007). Given the nuances of these contexts, we felt that they would provide some interesting opportunities to examine complex procurements and FLE knowledge exchanges specifically.

We initially used a theoretical sampling approach to identify the respondent firm. Since we were interested in complex procurements, we looked for examples of these. Our search focused on the four common elements identified in the literature that defines these phenomena: i) high cost/high risk, ii) interactions between multiple stakeholders at multiple levels, iii) long time horizons (> 12 months), and iv) technically complex products and services (Biggemann et al., 2013; Brady et al., 2005; Flowers, 2004, 2007). This narrowed the basis of our search activities to capital goods industries. The research team approached several companies that we considered likely to engage productively in a long-term research project. This then led to endorsement from the company in which we conducted the study. At the time of writing, this company had operations spanning every continent, a 150-year history, 4200 personnel and more than €1.05 billion in annual turnover.

To streamline the management of the study, we focused on the operations of a single division within the company.[2] This allowed us to concentrate on FLEs with direct involvement in complex procurement implementation processes. Since the Finnish mining company was the supplier firm in these situations, we also engaged members of buyer firms throughout the process, which we detail in the sections below. Our analytical process has similarities with an applied business ethnography since we draw on our subjective interpretations of qualitative data to describe the behaviors of FLEs in social settings by analyzing their communicative practices (Atkinson and Hammersley, 1995; Fetterman, 2010; Kalou and Sadler-Smith, 2015). Ethnography has become a popular means to understand phenomena in business markets (Pressey, Gilchrist, and Lenney, 2014). Consistent with both single case methods and ethnography, we combine interview data, field notes of meeting observations and content analyses of key documents to induce and triangulate our findings (Atkinson and Hammersley, 1995; Fetterman, 2010; Yin, 2009).

3.2. Research process

Our research process began in June 2013 and concluded in February 2016. This involved three distinctive, yet partially overlapping phases that lasted between eight and twelve months each. This included i) defining the research agenda and selecting respondent customers, ii) designing and conducting the primary field work, and iii) analyzing, revising, and validating the results. The second and third authors were embedded in the research context for this period. At the time of commencement, the second author had about two years of experience in research collaboration with the Finnish mining company while the third author had been a part-time employee with this firm for about five years. This provided the research team with an extensive pre-understanding of mining operations and processes, the technical requirements of the dewatering solution and its lifecycle, and the operational and political landscape at customer locations, as well as access to key decision makers. These authors actively participated in meetings, conversations and observations at locations where dewatering plant solution design and implementation processes took place. While this

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[2] As stated in the introduction, we focused on dewatering solutions implementations.

Table 1
Interview respondents.

Firm	Titles of informants	Industry experience
1	Design manager	35 years
2	Process manager	34 years
3	Project delivery manager	20 years
4	Principal process engineer	20 years
5	Project engineer	8 years
6	Process engineer	15 years
7	Procurement manager	40 years
8	Project manager	10 years
9aˆ	CEO	28 years
9b	GM, technology	22 years
10a	General manager	25 years
10b	Engineering project manager	28 years
11	Project supervisor	7 years
12	Chief metallurgist	20 years
13	Chief metal engineer	15 years
14	Manager, process engineering	15 years
15	Process and metallurgical engineer	9 years
16	Senior process metallurgist	13 years
17	Senior process engineer	13 years
18	Senior process metallurgist	13 years
19	Metallurgist engineer	11 years
20	Civil engineer metallurgist	26 years

ˆNB. Where more than one respondent participated in the study, we use the same firm number, and a lower case letter to denote separate individuals.

provided access to rich data, it also involved direct engagement in the empirical context. As such, the findings of the study rest on a dialectic between subjective interpretation and objective appraisal, which is a positive attribute of single case, ethnographic research (Atkinson and Hammersley, 1995; Fetterman, 2010; Yin, 2009).

3.2.1. Interviews

During the fieldwork phase, we conducted semi-structured interviews with 22 key decision-makers. Sales managers from the Finnish mining company identified participants, which we then contacted (a list of interview respondents appears in Table 1). Target respondents were senior decision makers with significant experience in procuring dewatering plant solutions or similar systems. The purpose of the interviews was to establish the nature of supplier management practices. Key topics of interest included how they participate in the purchase process, what they seek from suppliers, how they enable suppliers to fulfill their tasks and how culture influences these behaviors (a list of interview questions appears in Appendix A). The duration of interviews was between 24 and 64 min, with interviews recorded and subsequently transcribed verbatim. This resulted in 355 pages of interview transcripts.

3.2.2. Meetings

During the course of the study, authors two and three participated in and observed 21 meetings, of which there were four main types. Sales meetings included an introduction of the local operations, and a negotiation between a sales team from the Finnish mining company, and up to four senior decision makers from the customer firm (seven meetings). This provided an opportunity to observe behaviors in a real-life social setting. Steering group meetings with the Finnish mining company provided opportunities to interact with senior managers with interest in the project (four meetings). These meetings also allowed us to refine project parameters such as respondent selection and timetable planning. They also allowed us to elicit feedback and alternative interpretations in relation to the emergent results. Project team meetings comprising representatives from the Finnish mining company and the research team allowed us to develop and refine our understanding of key concepts (seven meetings). We also presented the key findings of the study as they emerged to a broader managerial audience, including key members from both the steering group and the project teams (three

meetings). These presentations allowed us to confirm our findings by exposing tentative findings and then establishing consensus through dialogue with meeting attendees (Lincoln and Guba, 1985). During the course of meetings, we took meeting notes (about 100 pages) and obtained presentation slides and other documents (which totaled more than 100 pages).

3.2.3. Document analysis

We also analyzed a wide range of supplementary documentation. This allowed us to explore the contextual influences relating to the mining industry while also gaining greater depth of understanding in customer and supplier firm dynamics. We considered two industry reports and a customer study to uncover industry trends as these relate to dewatering plant solutions. We also had access to customer and supplier annual reports, sales and marketing materials, technical reports and descriptions of key processes, including product life cycles. A range of confidential documents from the Finnish mining company supplemented these publicly available sources. Confidential documents included a strategic positioning analysis report, customer case histories, customer surveys, internal customer reports, internal newsletters and market analyses. When combining all documents, they totaled more than 600 pages of content.

3.3. Data analysis

An abductive process was used to analyze and interpret the empirical materials produced during the fieldwork (van Maanen, Sørensen, and Mitchell, 2007). Specifically, we employed systematic combining which involves an iterative comparison between findings in the data and the existing literature in the field (Dubois and Gadde, 2014, 2002). This approach was initially designed for single case study contexts as a means to build new theoretical interpretations of emergent concepts. Central to this procedure is the notion of "matching", which involves mapping theoretical concepts that already exist and then overlaying them with the emerging findings. Where differences exist, this leads to the identification of new theoretical ideas. Consequently, the study involves four sets of findings that relate to the initial two research goals. We explain them, and the accompanying analytical processes we employ, in the sections below.

3.4. Data credibility

We used Lincoln and Guba's (1985) approach to establish the credibility of the findings. We first established the face validity of our findings. This involved a number of steps. First, we ensured that interview respondents had sufficient familiarity with complex procurements. Hence, our initial interview questions probed the respondent's background to establish their level of experience. Second, the meeting observations all focused on some aspect of dewatering solutions implementation. This meant that attendees all were conversant with relevant implementation issues. Third, the document analyses we conducted all related to dewatering solutions implementation. Between these measures, we felt that sufficient face validity existed across our data sources.

We next focused on establishing reliability. We took three steps in this process. First, we triangulated findings across multiple data sources, ensuring we had at least three pieces of data from different sources to support each of the aspects of our findings (Yin, 2009). Next, we conducted independent co-analyses (Miles and Huberman, 1994), which involved independent appraisals of the datasets given the agreed goals of the study. This produced a moderate level of consensus after an initial process, with two further iterations then improving inter-rater reliability to 80% across the three data coding processes (James, Demaree, and Wolf, 1984; Tinsley and Weiss, 1975). Lastly, we exposed a broad managerial audience with familiarity of the mining industry to our findings during ten meetings (see our process description on this in

the previous section). This allowed us to establish a consensus of findings through dialogue (Lincoln and Guba, 1985).

4. Findings

The findings from the study appear in three sections. The first section develops a taxonomy that categorizes supplier collaboration according to the degree of investment the buyer firm makes in sensemaking activities. The second section describes three main supplier sensegiving roles that emerge from the data. The third section maps the relative importance of supplier sensegiving roles in terms of implementation stage and the types of supplier collaboration that emerge in the first findings section.

4.1. Towards a taxonomy of supplier collaboration given sensemaking investment

We begin our analysis by examining the relative interplay between sensemaking of buyer firm FLEs and the sensegiving actvities of their supplier firm counterparts. Our analyses center on the narratives about FLE expectations of their task requirements, the associated knowledge exchange process and the respective roles of both themselves and the primary FLEs they interact with from their counterpart firm (i.e. the buyer or supplier firm). Narrative analysis focuses on the stories or metaphors that respondents use to explain a phenomenon of interest (Cayla and Arnould, 2013; Grayson, 2007; Mäläskä, Saraniemi, and Tähtinen, 2011), and, as such, is consistent with the precepts of sensemaking and sensegiving (Weick, 1995; Weick et al., 2005). With these parameters in place, we interrogated the dataset for appropriate stories and metaphors, which we categorized as most relevant to buyer firm FLE sensemaking or supplier firm FLE sensegiving respectively using NVivo software. Using these two pools, we began with an open coding process to identify major themes and a selective coding to identify specific attributes (Lincoln and Guba, 1985; Miles and Huberman, 1994). Table 2 contains a descriptions of the outcomes of this process.

When considering buyer firm FLE sensemaking actvities, we were mindful that previous studies identify important sensemaking attributes such as enactment, retrospection, plausibility, routinization, and retention (Vlaar, Van den Bosch, and Volberda, 2006; Weick et al., 2005). So, we searched for evidence of these actvities. We identified previous studies on assessing information value and information/knowledge processing (see Table 2 for indiciative sources). These studies overwhelmingly concentrate on the inter-firm level rather than on FLE interactions and do not consider complex procurement situations. Consequently, we adapted these concepts to our purpose. Important to our study is the notion of bounded reliability, whereby FLEs face resource constraints that curtail their ability to engage in all actvities simultaneously (Kano and Verbeke, 2015; Verbeke and Greidanus, 2009). This led to a search for evidence that FLEs make deliberate decisions about

time and other resource allocations. While several authors highlight the importance of micro-level resource management decisions (Cantù, Corsaro, and Snehota, 2012), we see this as an important element of buyer firm FLE sensemaking activites.

We next directed our attention to supplier firm FLE sensegiving actvities. While sensegiving is also not a new concept, it is less developed than sensemaking in the extant literature. We noted that sensegiving often involves attempts to influence others through storytelling, metaphors and narrative (see Table 2 for indicative citations). We see this is important when affecting organizational change (Fiss and Zajac, 2006; Gioia and Chittipeddi, 1991; Hill and Levenhagen, 1995; Monin et al., 2013), and, to less-studied extent, to inter-firm interactions (Shepherd, Patzelt, and Wolfe, 2011). We also saw bearing new knowledge or information as an important aspect of sensegiving, with this being more common in selling situations and when conveying product information (Ballantyne, Frow, Varey, and Payne, 2011; Squire, Cousins, and Brown, 2009). However, these concepts had not previously been adapted to accommodate an FLE interaction in complex procurements. Our evidence indicates these concepts still have relevance in our setting, albeit for specific task-related applications. As with buyer firm FLE sensemaking activites, we consider supplier firm FLE sensegiving actvities subject to bounded reliability. This also leads us to conclude that resource allocations have the same importance in this respect. In sum, we see supplier firm FLE sensegiving actvities as efforts towards supplier collaboration for task completion and that this is, in large part, an information conveying effort.

Our analyses then involved exploring the interplay between buyer firm FLE sensemaking and supplier collaboration approach. For this purpose, we searched for respondent narratives indicative of "high" versus "low" levels of engagement across both dimensions. For buyer firm FLE sensemaking, we searched for evidence of relative information appraisal, information processing and resource allocations towards tasks that involved engagement with suppliers. For supplier collaboration, we looked for evidence of influencing, knowledge bearing and resource allocation towards tasks that involved engagement with buyers. Through these analyses, we began to notice overlaps between buyer and supplier perspectives. We continued our search by triangulating between the narratives from both perspectives. This was a particularly crucial step since the narratives we found were based largely on subjective perception. Where we found a high level of agreement, these became the basis for further attempts to establish credibility. To understand the extent of this interplay, we used NVivo to map where there were high levels of agreement between multiple sources (Cayla and Arnould, 2013; Coviello and Joseph, 2012). We disregarded cases, where we did not achieve high confirmation between the multiple sources available or where there was insufficient evidence. This resulted in a taxonomy of four profiles (see Table 3).

Type I profiles involve low buyer investments in sensemaking and heavy reliance on suppliers for sensegiving. In these scenarios, the

Table 2
Sensemaking and collaboration coding attributes.

Theme	Definition	Sub-themes	Supporting literature
Sensemaking activities (as specific investments)	Buyer firm FLE allocations of time, effort and resources towards interpreting supplier information	• Information appraisal	Balasubramanian, Bhattacharya, and Krishnan (2015), Yang and Babich (2014)
		• Information/knowledge Processing	Hong et al. (2016), Jayachandran, Sharma, Kaufman, and Raman (2005), McGaffey and Christy (1975), Siehl, Bowen, and Pearson (1992)
		Resource allocation	Cantù et al. (2012), Certa, Enea, Galante, and Manuela La Fata (2009), Haas, Criscuolo, and George (2015), Prior (2013)
Sensegiving activities (as supplier collaboration)	Supplier firm FLE allocations of time, effort and resources towards communicating task-related information	• Influencing through storytelling, metaphors and narrative	Fiss and Zajac (2006), Gioia and Chittipeddi (1991), Hill and Levenhagen (1995), Monin et al. (2013)
		• Knowledge bearing	Li and Scullion (2010)
		• Resource allocation	Certa et al. (2009), Haas et al. (2015), Prior (2013)

Table 3

A taxonomy of supplier collaboration vs. buyer firm sensemaking investment approach.

		Sensemaking investment level	
		Low	High
Supplier collaboration level	High	**Type I** • Assign low priority to internal sensemaking processes • Heavy reliance on external suppliers as sense-givers • Propensity for pull-based information exchange **Indicative Quotation**: "*To be honest, one of the challenges is that we are working with very little information, and a lot of it is dependent on the expertise of people that can apply their knowledge to other products or operations. So, the challenge is actually that we can't formulate a design for a plant based on very limited information and that's where companies like [a supplier] can actually add a lot of value.*" (S4).	**Type II** • Confident in their own ability, extensive investment in sensemaking • Heavy reliance on external suppliers as sense-givers, particularly for specific topic areas • Propensity for pull-based information exchange **Indicative Quotation**: "*We always need to call for technical support… [Training] is the most common practice here. People can learn very fast. There are many things that people don't know. But using the manuals, using the experience from other people, we can operate one [piece of] equipment. At least if it is not too difficult to do. But for example, for a pump, for a filter, it needs training for at least one person.*" (S5).
	Low	**Type III** • Assign low priority to internal sensemaking processes • Suppliers as 'enemies' that can fulfil certain needs • Propensity for push-based information exchange **Indicative Quotation**: "*We don't want to hear suppliers´ marketing propaganda as most of the time they tell us what they think we need – not necessarily what we want. The supplier is required to listen to us and offer exactly what we want. We don't have to suit to what they think we need.*" (A7).	**Type IV** • Confident in their own ability, extensive investment in sensemaking • Suppliers as 'enemies' that can fulfil certain needs • Propensity for push-based information exchange **Indicative Quotation**: "*We don't believe there are any genuine solution suppliers available in the market – only packages. If we need a hole we always get a drill and we have to turn that into a hole. These packages require a lot of work further from us to be able to bring it to a stage it actually appears like a solution to our needs.*" (A8).

buyer firm often did not have sufficient resources to allocate to sensemaking efforts. This tends to indicate excessive demands for FLE time from multiple commitments and/or managerial perceptions that a specific procurement is low risk. Hence, the buyer firm often places the onus on the supplier firm to "take them through the process". Type II profiles involve high sensemaking investments and high supplier collaboration. These generally reflect procurements that have high resourcing and that buyer firm managers perceive as important. This means they allocate appropriate personnel with high skills and experience relevant for the specific procurement and, as such, they are most likely to collaborate extensively with suppliers, but in a selective fashion, so as to address perceived gaps in capacity or knowledge.

Type III profiles involve low sensegiving investments and low supplier collaborations. Some of our data indicate somewhat adversarial relationships with suppliers. Consequently, buyer firms avoid utilizing supplier skills and experience. Instead, they prefer to keep activities "in house". These profiles also reflect the low priority and resourcing that buyer firm managers assign to these procurement tasks. Type IV profiles also involve low supplier collaboration efforts, with this again reflecting efforts to control procurement activities internally. However, these instances do not necessarily reflect the low prioritization of the procurement. Instead, the buyer firm allocates internal resources with sufficient expertise and capacity to complete assigned tasks.

Each of the four profiles represent extreme cases. Many of the sensemaking investment/supplier collaboration combinations we identified fall at a point in between the extremes. However, it is clear that supplier collaboration is often subject to buyer firm control. In this, we found two main dynamics. "Pull"-based approaches to collaboration occur when buyer firms perceive suppliers have important expertise and capacity and, as such, they demand the services on offer. These services can involve allowing the supplier to guide them through an entire procurement process (Type I) or to guide them through specific aspects of a procurement process (Type II). "Push"-based approaches to collaboration, however, involve suppliers actively pursuing opportunities to work with the buyer. This generally reflects more adversarial attitudes on the buyer's behalf. This involves utilizing suppliers only for specific tasks (Types III and IV). Given these observations, it appears that pull-based approaches to supplier collaboration are more likely to enable positive knowledge exchanges.

4.2. Mapping supplier sensegiving roles

The next phase of analysis focused on supplier collaboration as sensegiving. For this, we draw on role theory, which involves assigning socially defined categories to the behaviors of supplier FLEs (Biddle, 1986). Current buyer-supplier interaction studies center on supplier roles, with most studies focusing on job designations such as sales managers or product managers (Agnihotri, Vieira, Senra, and Gabler, 2016; Goolsby, 1992; Lysonski and Johnson, 1983), or on expectations associated with roles (Bechky, 2006; Homburg, Wieseke, and Bornemann, 2009; Wieseke, Ahearne, Lam, and Van Dick, 2009). Current debates in service logic suggest that roles and tasks have ambiguous associations and that there is a need to establish greater clarity here (Grönroos, 2011; Grönroos and Voima, 2013). Consequently, our analysis focuses on how supplier firm FLEs create valuable outcomes for buyer firm FLEs, particularly as these relate to task completion.

Through our narrative analysis approach, we identified a range of stories and metaphors that described the key behaviors of supplier firm FLEs and their outcomes for buyer firm FLEs. Given the context of our dataset, we consistently observed dynamism and uncertainty. This led to multiple stories about the need to "establish credibility", "to justify actions" and to "have legitimacy" so as to substantiate the required actions. The role of supplier FLEs was often to provide this since they were often "outsiders" with "expertise" (rather than partial employees, Mills and Morris, 1986; Santos-Vijande et al., 2016), which often allowed buyer firm FLEs to justify their actions to important stakeholders and/or to achieve required task outcomes efficiently.

Drawing on the metaphors and stories we had identified through NVivo that indicate achieving legitimacy as the primary role of supplier FLEs, we next searched for a set of explicit behaviors and their outcomes from the buyer firm FLE perspective. By identifying outcomes, we then used these to categorize behaviors and to define behavioral roles (as opposed to positions within a hierarchy). We eliminated data that addressed more than one category. We also triangulated our findings through iterative comparisons across multiple data sources. This led us to define three major supplier FLE sensegiving roles.

Table 4
Supplier sensegiving roles.

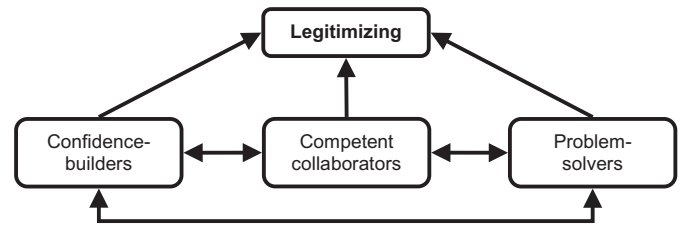| Role	Definition	Example behaviors	Outcome	Supportive literature
Confidence-builders	The explicit endorsement of buyer firm FLE actions	• Sending an email with supportive information • Providing written references • Offering a supportive anecdote in a meeting	• Lower perceived risk	Hung (2014), Liu et al. (2012)
	Indicative quotation: *"We use commercializing experts to make value propositions that show how we differentiate based on speed, scope, budget, and flexibility. And then show how this compares to other options… our goal is risk mitigation, and feasibility studies help us to convince the customer's stakeholders".* (15).			
Competent collaborators	Simplifying information about context, the nature of problems and/or engaging directly in task completion	• Summarizing complex information and presenting it in an email or report • Recommending specific actions that demonstrate in-depth task knowledge • Engaging in sophisticated conversations with key stakeholders	• Lower perceived complexity • Lower perceived uncertainty	Gioia and Chittipeddi (1991), Lundgren-Henriksson and Kock (2016), Petkova, Rindova, and Gupta (2013)
	Indicative quotation: *"We can proactively design and prepare the implementation stages, and this allows us to design different service bundles including analyses of usability, maintenance, and third party vendor components. If the customers buys from us, he will get a perfect list of all the nuts and bolts that he will need during the implementation".* (17).			
Problem-solvers	Identifying, describing and/or enacting courses of action that address implementation problems	• Providing an appraisal of a given problem or issue in a meeting • Describing the possible courses of action to address problems in conversations • Implementing courses of action through collaboration	• Addressing implementation problems • Reducing the severity of problems	Aarikka-Stenroos and Jaakkola (2012), Ahern, Leavy, and Byrne (2014), Spence and Brucks (1997)
	Indicative quotation: *"They have always answered my questions, they are always around us talking about their new technologies, their new plants, and so on".* (16).			

Fig. 1. Supplier FLE sensegiving roles.

Confidence-builders attempt to reduce perceived risk through the endorsement of buyer firm FLE actions. Similar to the use of celebrities or the invocation of senior managers' wishes, confidence-building utilizes reflected legitimacy to substantiate actions (Hung, 2014; Liu, Huang, Luo, and Zhao, 2012). Competent collaborators simplify information about context, the nature of problems and/or they directly engage in task completion. Through their efforts, they reduce perceived task complexity and/or uncertainty. Previous studies identify these roles as important to implementing corporate change, although there has been little consideration of these as important in complex procurements. Lastly, problem-solvers were active in identifying, describing and/or enacting courses of action that address implementation problems. While previous studies highlight problem-solving as an important type of action, we see it as also part of a role mandate. Table 4 contains a summary of these roles.

Since each of these roles legitimize buyer firm FLE behaviors in some way, we see them as inter-connected (as we suggest in Fig. 1). While our narrative analysis suggests one role may dominate more than others, this often depends on the individual FLE and the implementation context.

4.3. Supplier sensegiving according to implementation stage

The findings also suggest that the relative importance of supplier sensegiving roles is dynamic. Complex procurements often involve lengthy implementation schedules (Brady et al., 2005; Töllner et al., 2011; Tuli, Kohli, and Bharadwaj, 2007). The findings appear to support the notion that different supplier sensegiving roles differ in their importance according to implementation stage. To ascertain the implications of this, we reflected on the taxonomy of sensemaking/sensegiving we describe in Section 4.1. We intentionally adopted a simplistic notion of procurement implementation processes as consisting of "pre-sales", "implementation" and "post-implementation" since this would allow a simple way to identify important milestones and is broadly consistent with the approaches adopted in earlier studies (Abrahamsen et al., 2012; Gioia and Chittipeddi, 1991; Monin et al., 2013). Our next step involved a cross-mapping between each of the profiles in the taxonomy against evidence of implementation stage (Coviello and Joseph, 2012). We then cross-checked and triangulated findings. Table 5 contains a summary of these findings.

Type I profiles tended to value confidence-building at the pre-sales stage since this helped build support for engaging a supplier capable of taking a leading role in the implementation process. Problem-solving then became more important during implementation and post-implementation. These sensegiving roles tended to focus on addressing specific concerns of buyer firm FLEs while also adapting to the nuances associated with integrating complex systems with existing buyer firm infrastructure. Type II profiles sought competent collaborators during the pre-sales stage. This allowed the precise formulation of implementation plans and design specifications. These then enabled suppliers to focus on specific, complex activities. This meant that problem-solving was also important in the subsequent stages of implementation and post-implementation. These tended to focus on in-depth collaborations regarding the specific aspects in which the supplier was involved.

Table 5
Supplier sensegiving roles during implementation stage.

Type	Pre-sales	During implementation	Post-implementation
I	**As confidence-builders:** • Signaling expertise and capabilities • Developing formal project plans *"Well, with permanent assistance and contact … we always ask for guarantees, warranties, there are penalties, too … when we prepare the quotation, we ask for warranties and we ask the same from everyone."* (19).	**As problem-solvers:** • Leading implementation and installation • Coordinating processes and activities *"We don´t have direct experience …, the owners sometimes, they don't know how to manage the schedules of the projects or how to integrate different areas … [or have] negotiation ability skills."* (18).	**As problem-solvers:** • Conducting maintenance and trouble-shooting • Proposing solutions for evolving requirements *"From a technical point of view, [the supplier] is very strong, the know-how and technical solution is very good, but we don't see the [supplier's] people working together with us at site. We don't see your sales person asking at the site, what we need, what is the next project, how can I help you."* (20).
II	**As competent collaborators:** • Evaluating alternative product/service options • Co-designing plans and product/service solutions *"We like to work with them [vendors] to make sure we get something that's going to be best for the project,… the important thing for us is to work together on the design, make sure that we are happy with it, we can take then integrate it into our designs and make sure everything interfaces properly, and then we have a solution."* (3).	**As problem-solvers:** • Staying updated of operational conditions • Reacting swiftly to customer requests *"When we do some project or work, we need to ask her and we need fast answer: "Okay, let me check!" and after 3 am or 3 pm "okay, this will be good in an hour"…When I do that, it is not a waste of time, but it's a time that I invest into her … if something happens with the pump… a little problem, problems or anything else, we need to know that the supplier is worried about what happened."* (15).	**As problem-solvers:** • Providing training and operational support • Sharing information and specialist knowledge *"They [suppliers] can help us … to find out what is the best technological fit. And also give us information that we need in order to move the project forward … what's technologically feasible … [but] at this stage … we don't need to know details, because we just try to understand what the basics project is about."* (12).
III	**As competent collaborators:** • Proposing alternative product/service combinations • Demonstrating integration skills *"What is important is that vendors are aware of the fact that… all the components of the entire process must be integrated … It's how you bundle all together."* (18).	**As problem-solvers:** • Ensuring product/service fit existing systems *"If it is small equipment, they are just supplying the equipment and … the company buying it is installing that themselves … [if] it is bigger project where you're buying lump sum turnkey type, most of the smaller equipment, filter, pumps, agitators, they just supply equipment, which then the engineering group, whether it is internal or external installs."* (9a).	**As problem-solvers:** • Conducting maintenance and trouble-shooting • Reacting swiftly to customer requests *"It's the support after sales …how do they support the needs that we have and how fast do they respond to our request."* (18). *"The key thing is always giving insurance to the user that these things [solutions] are continuously being maintained and the users are always getting a better solution."* (14).
IV	**As confidence-builders:** • Developing feasibility studies • Providing customer references • Conducting trials and test-runs *"We might have done three or four months of technical due diligence to make sure it was the right thing, it's not going to broke, we went to [other country] to see one in operation."* (2).	**As problem-solvers:** • Sharing information and specialist knowledge • Keeping customers updated of process progress *"The best ones tells us what's happening. You know, information is critical, quite often what will happen is that you know the vendors will get the order, we will have the proof of design and then there becomes a big black hole and at the end of it something pops out … What we like to know is, what is happening, to be involved."* (3).	**As confidence-builders:** • Maintaining stakeholder communication • Providing process guarantees and warranties *"I have been in number of situations where we have purchased the equipment and as soon as it lands on the site then they disappear and we never hear from them again … The most of the risks I usually see are in aftersales, will they be there for us once we are operating or are they just interested in the sale."* (3).

Type III profiles also valued competent collaboration sensegiving roles at the pre-sales stage. This generally involved an expectation that suppliers would assemble a "solution" by presenting a proposal that integrates multiple products and services in a manner that preemptively addresses the idiosyncrasies characterizing the buyer firm. In this, suppliers could demonstrate sufficient knowledge and skills that would make them appropriate collaborators. Problem-solving became more important during implementation and post-implementation stages, where these activities focus more on integrating their proposed solutions with existing supplier systems and by troubleshooting. Type IV profiles sought confidence building in the pre-sales stage. Significant investments in due diligence activities were likely as means to ensure buyer firms had sufficient information to understand suppliers. If suppliers could "pass the test", this would increase buyer firm confidence. During implementation, problem-solving became more important. This normally meant frequent yet precise communications about emergent issues and the implementation of their specific task responsibilities. Since buyers often were confident in their own skills and resources, the post-implementation stage saw higher emphasis on providing resources to address specific issues. Hence, buyer firms sought confidence building in the form of warranties and assurances of help if necessary.

5. Discussion

The findings suggest that the sensemaking and sensegiving processes between FLEs are important considerations in complex procurements. The buyer sensemaking investment approach determines i) how much information an FLE is exposed to and ii) how they appraise that information. While earlier studies suggest that upward dialogue (Nonis, Sager, and Kumar, 1996; Tourish and Robson, 2006) can translate FLE-level information to firm-level outcomes, the present study suggests that buyer sensemaking investments influence this process by shaping information flow. The determinants of information flow and form likely involve a discursive relationship with norms at the firm level, where these norms help to determine the relative value of information. Hence, this becomes one emphasis of an inter-subjective consensus (Martinsuo and Ahola, 2010; Squire et al., 2009). The norms against which these judgements form relate to task specificities rather than broader forms of knowledge. This is largely due to the temporal nature of FLE work in complex procurements. Given this, it is more likely that buyer firm absorptive capacity will center on generating efficient outcomes at the task level. It is also likely that the nature of broader learning endeavors of the kind likely to produce innovative new outputs, occurs at the firm or network levels instead (Choi, Kim, and Lee, 2010; Nätti, Hurmelinna-Laukkanen, and Johnston, 2014).

The study also shows how supplier FLE sensegiving approach affects their ability to engage. The study does this by profiling how buyer FLE sensemaking and supplier FLE sensegiving interact. The resulting taxonomy illustrates the various narratives that underpin engagement approach. This is the first attempt to profile these interactions in complex procurements. Indeed, related studies describe dyadic knowledge flows in a broad sense (e.g. through value creation as a buyer-

supplier interaction (Aarikka-Stenroos and Jaakkola, 2012; Hilton, Hughes, and Chalcraft, 2012) without considering the possibility for variances in FLE engagement approaches. The more nuanced view that this study suggests could help provide greater clarity as to the micro-level knowledge sharing dynamics of FLEs.

The study also identifies "legitimizing" is an underlying driver of these engagements, with these ultimately resulting in three main supplier FLE sensegiving roles (confidence building, competent collaboration and problem-solving). Several studies question the nature of buyer versus supplier roles in value co-creation (Grönroos, 2008, 2011; Grönroos and Voima, 2013). The findings in the present study identify an over-arching motivation that is relevant to knowledge intensive businesses (Aarikka-Stenroos and Jaakkola, 2012; Haas, 2006; Santos and Spring, 2015). The gradation of legitimizing roles into three primary forms yields greater clarity as to how legitimizing manifests as role behaviors. This contrasts with earlier studies that focus either on legitimate roles associated with organizational positions (such as sales managers) or on behaviors such as problem-solving and adaption that are not role specific. The present study suggests that goal-oriented behaviors influence the nature and form of value co-creation roles. As such, these insights shift the emphasis of value co-creation roles to goal-oriented behaviors of specific actors and that these involve sensegiving endeavors.

While sensemaking is dynamic, reflexive and emergent, the present study illustrates how this relates to complex procurement. Previous studies illustrate this in terms of network picture evolution and network position (Colville and Pye, 2010; Leek and Mason, 2010). However, there has been less consideration of an emergent collaborative process at the dyadic level, with current studies either focusing on the composition or complementarity of partner network pictures (Holmen et al., 2013; Leek and Mason, 2010). Our study shows that implementation stage affects role prominence and that this differs depending on sensemaking/sensegiving profile. This fine-grained understanding shows that supplier FLEs emphasize different sensegiving roles during implementation and that sensemaking/sensegiving profiles affect their relevance. Ultimately, this emergent process affects the buyer firm's ability to integrate and exploit information by shaping its availability and its format. Fig. 2 is a graphical representation of the links between sensemaking, sensegiving and absorptive capacity in complex procurements.

5.1. Managerial implications

For managers in complex procurements, the study highlights micro-level processes that affect buyer firm absorptive capacity. For buyer firm managers with implementation-related designations, optimizing FLE sensemaking is a question worth pondering. An important observation in this regard is that FLEs face time and resource constraints, so ensuring these are sufficient for the task at hand will increase the probability that an "ideal" sensemaking opportunity exists for the FLE. Managerial beliefs about what this comprises are likely to relate to i) their expectations of supplier firm FLE sensegiving endeavors, ii) their ability to allocate resources, and iii) the relative importance of assigned tasks to the FLE. Differences between managerial beliefs and those of FLEs are likely to create tensions. Where an FLE believes in the importance of the sensegiving activity at hand, and their manager does not, this can give rise to situations where managers require a delicate and nuanced approach to managing FLE expectations. The decisions taken in these respects have important implications of buyer firm absorptive capacity. This is because they screen information flows and this ultimately determines the scope for knowledge integration and exploitation.

Encouraging fruitful FLE interactions across the buyer-supplier dyad is also a challenge worthy of consideration. While this study has produced a series of profile and role descriptions of sensemaking and sensegiving in complex procurements, it has not addressed what would make these "fruitful". Ultimately, this will depend on the nature of the task at hand, its urgency and its relative importance. An understanding of the likely dynamics to emerge can then be overlaid with the findings in the study to help identify the likely i) buyer firm FLE sensemaking approach, ii) supplier firm FLE sensegiving approach, iii) how these converge as interactions, and iv) how these evolve. This could help inform project planning by anticipating likely FLE knowledge management challenges and associating these with buyer firm absorptive capacity.

5.2. Limitations and future research

The purpose of this study was to develop new theoretical insights as they relate to sensemaking, sensegiving and absorptive capacity in complex procurements. Given this, the outcomes of the study are descriptive and exploratory. The findings also relate to an in-depth case study of a large Finnish mining company. While this empirical process is suitable given the goals of the study, it is relatively unique. Capital
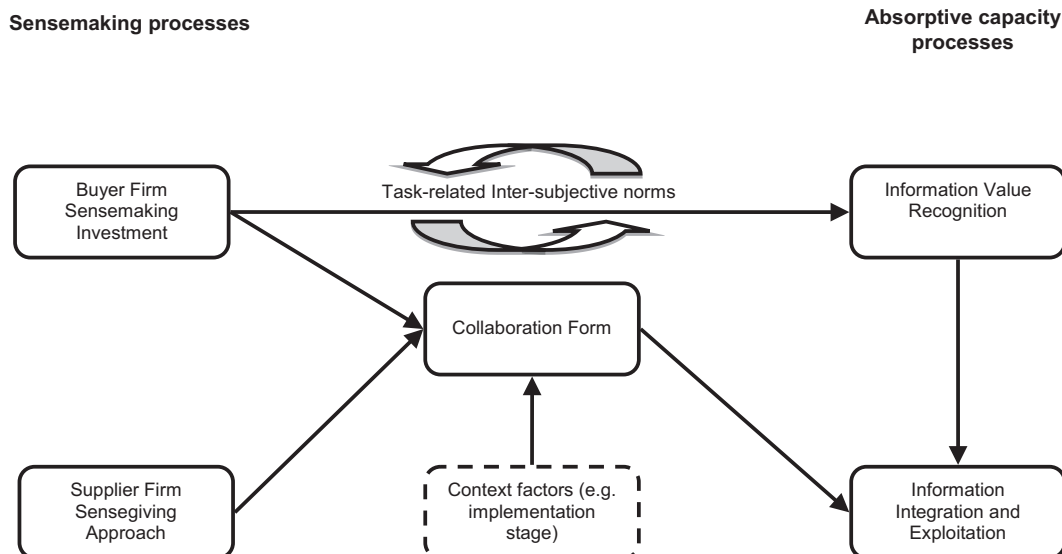
Sensemaking processes   **Absorptive capacity processes**

Fig. 2. A conceptual model of sensemaking, sensegiving and absorptive capacity in complex procurements.

goods procurement contexts are the most closely related. Hence, the findings of the study do not necessarily generalize beyond these contexts. This gives rise to a need for further research to generalize the findings of the study to other empirical settings. Moreover, the need to understand the nature of sensemaking and sensegiving at the FLE level is a topic in need of further research attention, particularly in supply chain studies. When studying contexts with high service components, the need for customization, and adaptability, the role of FLEs is very important. As the gatekeepers to both buyer and supplier firms, FLEs have the potential to dramatically alter the ability for both firms to capture and capitalize on external knowledge. Hence, these are topics in need of further research attention in supply chain contexts.

6. Conclusion

We develop a taxonomy containing four buyer sensemaking investment/supplier collaboration profiles that categorizes the likely combinations of sensegiving and sensemaking activities of FLEs in complex procurements. This interplay also relates to three sensegiving supplier roles ("confidence builders", "competent collaborators", and "problem-solvers"), with these evolving dynamically during implementation. These findings support a conceptual model of the apparent linkages between sensemaking, sensegiving and buyer firm absorptive capacity in complex procurements. Given these observations, the study is among the first to address sensemaking, sensegiving and absorptive capacity in complex procurement contexts. The findings have the potential to influence the actions of FLE managers when making decisions about the time and resources they invest in FLE sensemaking activities, noting that these ultimately affect the absorptive capacity of the buyer firm as a whole.

Acknowledgments

Appendix A. Discussion guide

1. *Could you describe your background, industry expertise and current role in your company?* [Respondents were probed for evidence that they are/have been part of and/or have significant experience of complex procurements].
2. *In your opinion, what kind of offerings represent complex procurements to you?* [Respondents were probed to describe and clarify what kind of offerings represented complex procurements to them, and how they differed from standard and less complex procurements].
3. *What factors do you evaluate when considering complex procurements? Are some factors more important than others?* [Respondents were probed to elaborate and clarify their decision process and criteria related to complex procurements].
4. *How do you evaluate alternative suppliers?* [Respondents were probed for the criteria that they used to evaluate different supplier firms that delivered offerings that were considered complex procurements].
5. *How do you conduct complex procurements?* [Respondents were probed for their typical complex procurement practices].
6. *How well do suppliers usually succeed in deploying and implementing the solution? What does this require from the customer?* [Respondents were probed for their role and typical challenges faced during the implementation of complex procurements].

7. *What kind of challenges do you usually face during the early stages of complex procurements?* [Respondents were probed for the nature and characteristics of the challenges they faced during early stages (i.e. pre-sales) of complex procurements and how those challenges influenced subsequent engagement decisions].
8. *How well do suppliers help you to operate and maintain the solution after implementation?* [Respondents were probed for their role and typical challenges faced after complex procurements].
9. *To recap, in your opinion, what are the key challenges in complex procurements?* [Respondents were probed to elaborate and clarify the most important issues that had emerged during the interview].

[In addition, where appropriate, respondents where probed for concrete examples, as well as clarification of specific decision making processes and engagement practices for each key episode or interaction they described during the interview].

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