

# Joint Problem Solving in Buyer-Supplier Relationships – Motivational and Perceptual Challenges

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## ***Abstract***

Problems are inevitable in buyer supplier relationships. Purchasing professionals spend considerable time solving operational problems, such as those pertaining to quality and delivery performance. This paper reports on a qualitative study of problem solving processes in three buyer-supplier relationships. These processes are time consuming, costly, and involve a number of actors in both the buying and supplying companies. The theoretical framework that forms the basis for the study is the problem solving model of Lang, Dittrich, and White (1978). The findings show that coordination of problem perceptions and motivation of all involved actors are main challenges for the responsible problem solver. Furthermore, communication plays a vital role to mobilize the involved actors.

## ***Introduction***

Problem solving is a key task in the purchasing organization (Giunipero & Percy, 2000; Helper, 1991a; Killen & Kamauff, 1995). Actors from buying and supplying companies are repeatedly confronted with problems that need to be solved to reestablish exchange performance (Rooks & Sniijders, 2001; Skarp & Gadde, 2007). Most of these problems require the involvement of actors from both the buying and supplying organizations, since the resources required might not be available in one organization (Van de Ven, 1976). Operational problems, such as those associated with quality and delivery, are often discovered in the buying organization, but the resources required to solve them are most likely to be found by the supplier. This requires an interorganizational effort and typically involves multiple actors in both companies.

Problem solving has been a key concept in the literature on buyer-supplier relationships. Many contributions have focused on creative B2B problem solving such as product development. Most studies have taken the (inter-)organizational level as the level of analysis, with only a few studying the interpersonal processes, spanning interorganizational space. Moreover, the perceptual and motivational challenges associated with problem solving processes have received limited attention. This paper investigates the process of solving operational problems from an inter personal perspective and incorporates perception and motivation as key phenomena. It contributes by framing a model of problem solving in buyer-supplier relationships. First the B2B literature on problem solving is reviewed. Second, general management theory on problem solving is introduced

to add to existing B2B knowledge, specifically by introducing a classical model of problem solving as a theoretical framework. Third, the three cases are described and the findings presented. Finally, managerial implications are offered.

## ***Problem Solving in Buyer-Supplier Relationships***

A problem is defined as a discrepancy between an individual's conception of current reality and a desired state of reality. It is a perceived gap between existing and desired states (Lang, Dittrich, & White, 1978). Interestingly, problem solving has been perceived of as the epitome of both buying and selling (Håkansson, 1982). Brown & Brucker (1990) argue that "*all industrial buying can be traced back to the need to solve a problem*" – defined by the requirements of the buying organization. Hence, the overarching task of the procurement agent is to close the supply requirements gap of her/his organization (Bonoma & Johnston, 1978; Wilson, McMurrian, & Woodside, 2001). Similarly, from the sales/marketing perspective, the key task is to solve customers' problems (Alderson, 1952; Bonoma & Johnston, 1978). In this process, the buyer and/or seller have to solve a range of smaller, short-term problems in order to maintain exchange efficiency. These types of problems have been referred to as "handling problems" (Håkansson, 1982).

Handling problems are perhaps not fundamental to business exchange at the strategic level, but the manner in which they are solved still affects efficiency and resource consumption. Therefore, methods by which problems are solved in buyer-supplier exchange are important to overall firm performance. This importance is mirrored in purchasing research, where considerable attention has been directed at problem solving capabilities of purchasing professionals. Several studies demonstrated that problem solving was amongst the most important purchasing skills (Gammelgaard & Larson, 2001; Giunipero & Percy, 2000; Killen & Kamauff, 1995; Kolchin & Giunipero, 1993). Problem solving has further been argued to be a source of knowledge creation (Andersson, Holm, & Johanson, 2007).

The studies of Helper (1991a; 1991b) were specifically concerned with strategies for solving problems in buyer-supplier relationships. Helper applied Hirschman's (1970) exit/voice dichotomy in investigations of the automotive industry. Customers following an exit strategy find a new supplier when encountering a problem, whereas a voice relationship denotes jointly working to resolve the problem. The exit strategy involves forcing the supplier to solve the problem single-handedly. The voice strategy, on the other hand, requires commitment and rich flows of information, signaling a joint approach to problem solving. The negotiation literature has investigated similar types of strategies, although these seem to be ultimately applied to describe tactics for discrete negotiation encounters rather than the overall interaction strategy. The problem-solving strategy, also referred to as integrative bargaining (Perdue & Summers, 1991), is one of several strategies for negotiation, others being competing, compromising, avoiding, accommodating etc. (Ganesan, 1993). Reminiscent of Helper's voice strategy, it involves buyer and seller actively working together to establish a valuable business arrangement, in this process exchanging information and scouring alternative solutions and hereby finding solutions that take the requirements of both parties into account (Calantone, Graham, & Mintu-Wimsatt, 1998; Ganesan, 1993; Graham, 1986; Perdue & Summers, 1991). Rooks and Snijders (2001) reported a study of problem resolution in IT B2B exchange. Based on the literature on the sociology of law and litigation theory, they surveyed 1252 IT transactions and identified problems experienced by the buying organization, such as late delivery and improper documentation. They applied an

evolutionary dispute resolution framework in their analysis, consisting of the four steps grief (discovering the problem), claim (making the grief known to the supplier), dispute 1 (imposing sanctions), and dispute 2 (involving third party). They found for instance that suppliers were contacted because of problems in 94% of the transactions, but only 1% led to third party involvement.

## **Joint Problem Solving**

In addition to these studies, the B2B literature has incorporated a large number of contributions, incorporating a variable describing the degree to which the parties solve exchange problems together – referred to as joint problem solving (Ellram & Pearson, 1993; Landeros & Monczka, 1989), interactive problem solving (Skarp & Gadde, 2007), shared problem solving (Heide & Miner, 1992), mutual problem solving (Bonoma & Johnston, 1978), interdependent problem solving (Bantham, Celuch, & Kasouf, 2003), or joint responsibility (for problem solving) (Johnston et al., 2004).

Problem solving is often argued to be a feature of collaborative relationships (Heide & Miner, 1992; Johnston, McCutcheon, Stuart, & Kerwood, 2004; Landeros, Reck, & Plank, 1995). Heide and Miner (1992) perceive problem-solving as one of four collaboration domains, in addition to flexibility, information exchange, and restraint in the use of power. Other authors have argued that joint problem-solving is a key element of relational governance (Cai, Yang, & Hu, 2008; Claro, Hagelaar, & Omta, 2003), partnerships (Landeros, Reck, & Plank, 1995; Saad, Jones, & James, 2002), and embedded relationships (Uzzi, 1997).

Several studies have found joint problem-solving to be positively related to satisfaction and commitment (Bantham, Celuch, & Kasouf, 2003; Cai, Yang, & Hu, 2008; Claro, Hagelaar, & Omta, 2003). Joint problem solving ensures mutually satisfactory solutions for encountered contingencies and thereby add to relationship success (Claro, Hagelaar, & Omta, 2003). It should be mentioned that one investigation, although unexpected, found no positive effect of joint problem solving on buyer satisfaction (Johnston, McCutcheon, Stuart, & Kerwood, 2004). A strong relationship, on the other hand, also provides the necessary foundation for effective joint problems solving (Claro, Hagelaar, & Omta, 2003; Landeros & Monczka, 1989; Ring & Van de Ven, 1994). Van de Ven (1976 p. 31) argues that the parties are more predisposed to help each other out with problems, the greater the length of association and degree of intimacy. The closer the relationship, the more similar the values, attitudes, and goals and the higher the level of trust in the other party, constituting a strong basis for joint problem solving (Khalfan, McDermott, & Swan, 2007; Ring & Van de Ven, 1994). In addition a number of authors concur that commitment is a vital antecedent of joint problems solving (Heide & Miner, 1992; Helper, 1991b; Landeros & Monczka, 1989). Committed buyers and sellers recognize the need for problem solving, allowing the relationship to endure.

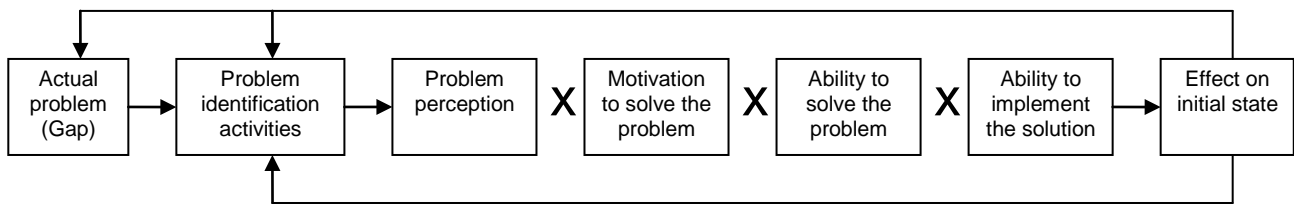
Ven de Ven (1976 p. 33) further describes relational development as a “*slow, flexible, developmental process with many small thrusts or activities around specific problems*” and emphasize that relationships grow on “*previous small, but successful exchanges between agencies. Each agency is able to see coordination’s positive aspects and to deal with its negative implications*”. This way joint problem solving reinforces the relationship, which again improves problem solving effectiveness.

## Communication

March and Simon (1958) noted that group problem-solving (as opposed to individual) requires interpersonal communication, and essentially externalizes the problem solving process from an individual cognitive to a social interactive task. Communication is necessary to gather relevant information. Effective problem solving is highly related to the extensiveness of the information flow (Helper, 1991a; Kasouf, Celuch, & Bantham, 2006; Landeros, Reck, & Plank, 1995). In addition, communication is a means of social interaction that has a large effect on problem solving effectiveness. In other words it is not just what information is transferred from where, but also *how* it is transferred (Ring & Van de Ven, 1994). Bantham, Celuch, and Kasouf (2003; 2006; 2006) investigated communication behaviors, emphasizing the *how* element of communication. One study investigated four specific behaviors: non-defensive listening, active listening, self-disclosure, and editing, and found that these communication behaviors mediate between cooperative norms and problem solving efficacy (actors' confidence in problem-solving skills and abilities) (Kasouf, Celuch, & Bantham, 2006). Another study focusing on the same behaviors, distinguishes between appraisals of business and interaction process outcomes (Celuch, Bantham, & Kasouf, 2006). Hence, actors not only evaluate how well a problem was solved in business terms, but also how well the counterparty handled the communication (the behavior). They propose that appraisals of communication behavior in problem-solving episodes have a large effect on satisfaction, investments and commitment. A third study went further into the interactive element of communication by investigating not only the effect on problem-solving of actor skillset (corresponding to communication behavior), but also actor *mindset* consisting of the 1) *awareness* of ever-present dialectical tensions of relationships and 2) *willingness* of actors to address the opposing relational forces (Bantham, Celuch, & Kasouf, 2003). The mindset variable represents an actor's openness to consciously managing relational exchange problems and includes the ability to take the other's perspective and readiness to learn from each other. Quoting several studies Ring and Van de Ven (1994) described how good humor, friendly interactions, and the avoidance of insults and threats produces successful negotiations.

## ***The Elements of Problem Solving***

Problem solving is a complex process, often involving multiple actors who contribute in various ways. It begins with "*the perception by someone who spots the problem and ends some time later when those affected by the problem perceive it to be solved*" (Brown & Brucker, 1990 p. 56). A number of authors, the majority belonging to the broader general management field, have offered models of the problem solving process. One of the most comprehensive contributions comes from Lang, Dittrich, and White (1978), who reviewed a range of the most popular problem solving models in the management literature and found similarities in the conceptualization of problem solving. As a result they propose a model that accomplishes to both captures the features of the reviewed works and simultaneously draws attention to certain features of problem solving emphasized in expectancy theory (figure 1).



**Figure 1:** Lang, Dittrich, and White's (1978) model of the problem solving process.

The authors indicate that the process should not be perceived as a strict progressive stage model - nestings, feed-back loops, iterations etc. are highly likely. Problem solving starts with the identification of an actual problem (a gap). Problem identification activities focus attention on retrieved information and knowledge that defines the gap. A clear representation of the gap must be present for effective problem solving to take place.

The four key elements of the model are problem perception, ability to solve problem, motivation, and ability to implement solution. Multiplying these provides a measure of problem solving performance, understood as the extent to which the gap is closed. At the forefront are naturally the abilities necessary to solve the problem. First is the ability to envision a viable solution to the problem, which covers information processing capabilities, creativity, aptitude, and insight. Second is the ability to actually effectuate the chosen solution, including possession of resources, decision making power, and specialist skills. Problem perception refers to the individual subjective perception of the gap identified through problem identification activities. Actors employ varying degrees of attention to problems and interpret gap information differently, because of differences in beliefs, preferences, mindsets, personalities etc. (Bantham, Celuch, & Kasouf, 2003; Lang, Dittrich, & White, 1978; Lyles & Mitroff, 1980; Newell & Simon, 1972; Ring & Van de Ven, 1994; Smith, 1989). The final element describes the motivation, which must be present with problem solving actors, if action is to take place (Bantham, Celuch, & Kasouf, 2003; Lang, Dittrich, & White, 1978; March & Simon, 1958; Meindl, 1982). Lang and colleagues (1978) conceptualize motivation in terms of expectancy, valence, and instrumentality. Expectancy covers the expectation by an actor that she/he possess abilities necessary to select an appropriate course of actions and carry it out. Valence covers the attractiveness of problem solving outcomes (first order) and instrumentality covers various second order costs and rewards of the process.

The described model was chosen as the theoretical framework of this study and provides the foundation for the scientific inquiry. The model was determined a valid framework for analysis for various reasons. First of all, it is published in a recognized journal. Second it is widely quoted and accepted, also within the B2B research community. Third, it is the result of synthesizing previous models of problem solving and hereby adheres to earlier research. Finally, it incorporates perception and motivation as key constructs.

Lang and colleagues state that the framework is broadly applicable and discuss the problem solving process at three levels of analysis: individual, group, and organization. This study uses the model in an interorganizational setting, similar to the study of Skarp and Gadde (2007). It investigates joint problem solving, not as an ideal collaborative mechanism, but as a necessary, interactive task, which requires some level of boundary spanning. It frequently involves actors from different organizations, since the resources required to solve many types of buyer-supplier problems are scattered among actors in different organizations (Van de Ven, 1976). These actors occupy different

positions in the involved organizations and take on different roles in the problem solving process (Brown & Brucker, 1990). Hence, the four elements of problem solving are spread out over a number of actors. In summary this study investigates the research question “*How do actors in buyer-supplier relationships solve operational problems jointly?*”

## **Methodology**

The findings reported in this paper were achieved through a qualitative research design. Qualitative studies are ideal for studying processes, where operational links need to be traced over time (Yin, 1994). Three buyer-supplier relationships were studied in order to produce knowledge on the process of problem solving. More than 20 interviews were conducted with key actors in both buying and supplying organizations. More specifically, the interviews sought to shed light on the process connected to one specific instance of problem solving in each relationship. The three problems were operational – one quality and two delivery problems – and as such relatively simple in their initial state. Furthermore, they were unexpected and sudden, and they were considered unsuccessful, because of the large amount of resources and difficulty solving the problems and the time taken to close the gap. A variety of involved actors (multiple informants) were interviewed to improve validity (Ellram, 1996), including category managers and purchasers (buyers), sales reps and KAMs’ (suppliers), process and product engineers, logistics personnel, service employees, as well as executives. Furthermore, key actors were interviewed on both sides of the dyad to generate a full picture of the process (Bantham, Celuch, & Kasouf, 2003). The interview guide was operationalized through the application of Lang, Dittrich and White’s model (figure 1). The interviews aimed at establishing the process of problem solving – mapping the key events, the actors involved in these events, the decisions made, and the outcomes. The process began when the problem (gap) was discovered and ended when it was solved. Furthermore, the interviews aimed at uncovering both the perceptions and the motivations of the involved key actors, in accordance with the figure 1. Enough interviews were carried out to reach saturation. All interviews were taped. Despite of the seeming simplicity of the initial problems, the processes involved at solving them were quite extensive and involved a number of different actors in different organizations. The data were analyzed using codes (perception, motivation, abilities etc.) identified in the theoretical framework (figure 1). This coding formed the basis for examining and comparing patterns between the cases to establish potential replication of the findings (Yin, 1994).

## **The Problems and Their Intended Solution**

All studied problems were detected in the buying organization and problem owners were actors from the buying organization. “Problem owner” is defined as the actor held responsible for solving the problem (Brown & Brucker, 1990). The descriptions below are highly reduced accounts of the investigated problem solving processes connected to each problem. They describe the initial phase of the process.

### **Problem 1**

This problem appears in the relationship between a producer (B1) of electronic systems for wind turbines and its supplier (S1) of electronic components. An assembly line employee in the East European plant of B1 discovered a batch of 27 defect electronic subsystem delivered from S1. He takes a photo and sends it by e-mail to the product engineer in the Scandinavian headquarters of B1, who contacts the purchaser (problem owner).

*Initial perceived gap:* 27 defect subsystems – substitutes are required.

*An attempted solution:* The problem owner urges the supplier to send 27 correct subsystems to the assembly plant ASAP. This problem seems straight forward to the problem owner – a matter of contacting the relevant supplier actor (service technician) and instruct him to deliver a new batch fast enough to avoid lead-time problems. The service technician responds that he understands the problem. He claims responsibility and seems motivated to service the customer. The problem owner notifies the assembly line and leaves the problem, expecting it to be solved. However, the substitute batch does not arrive in due time for assembly. The service technician understood that new subsystems were needed, but not at the required urgent delivery deadline. This incomplete understanding of the solution meant that the claim was not treated with the necessary urgency.

*Result:* The problem solver is informed that the substitute components have not been delivered on time and decides to ship the systems from the East European plant to the next link in the supply chain (the systems assembly plant in Scandinavia) in order to avoid late delivery to the final customer. The problem owner reasons that S1 can deliver the substitutes to the Scandinavian plant, where they can be assembled before delivery. Assembly employees at this plant are notified and instructed to make the extra assembly.

## **Problem 2**

Problem 2 appears in the relationship between a producer of water treatment systems (B2) and a supplier of power electronics (S2). A category manager (B2) learns that the KAM (S2) has not reserved enough capacity to produce and deliver the required volumes. Sales for the first part of the year were below expected and agreed in the contract, leading the KAM to reduce capacity dedicated to B2. When demand suddenly takes off, as promised by the category manager, inventories of several supplies dry out, threatening the ability to produce.

*Initial perceived gap:* The correct volumes are not present at B2 inventories.

*An attempted at a solution:* The parties hold a large crisis meeting (3 actors from S2 and 5 actors from B2) to agree on a plan for reviving the almost empty inventories. However, the meeting reveals large indifferences on almost all accounts. Despite a somewhat joint perception of the gap, finding a solution to the problem seems difficult. Supplier capacity has been sold to other customers. Motivation is clearly an issue. A history of negative communication on forecasts, focus on other customers, and insecurity as to the future of the relationship seems to reduce the supplier's motivation to solve the problem. The indifferences hurt the communication at the meeting, which quickly becomes antagonistic and emotional.

*Result:* It becomes clear to the buyer that the solution will involve a number of smaller initiatives involving a range of actors in various organizational units contributing different implementation abilities. For example, orders are placed with a second source and manufacturing planning is changed to produce other varieties of systems, drawing on inventories of supplies that are not yet threatened.

## **Problem 3**

Problem 3 plays out in the relationship between a producer of kitchens (B3) and a supplier of wood components (S3). A newly hired purchaser discovers that a batch of delivered wood moldings do not adhere to tolerances.

*Initial perceived gap:* The supplied moldings are of an unacceptable quality.

*An attempted solution:* The purchaser returns the batch to S3 and demands a batch of correct molds. However, S3's CEO, who manages the sales function, finds it difficult to see that there is a problem. He argues that the quality measures and criteria of the new purchaser are too harsh and that the quality of the delivered molds is equal to earlier delivered and accepted batches. Despite

disagreeing on the gap, he is motivated to set a few initiatives in motion, because of the status of this customer. He works with his employees at improving processes, but does not succeed and several successive delivered batches are returned by the purchaser in B3. Communication becomes increasingly negative, with the purchaser becoming frustrated and blaming the supplier, whose motivation is becoming replaced by anger. The S3 CEO feels that the demands are unfair and impossible to meet. The parties are far from a solution to the problem.

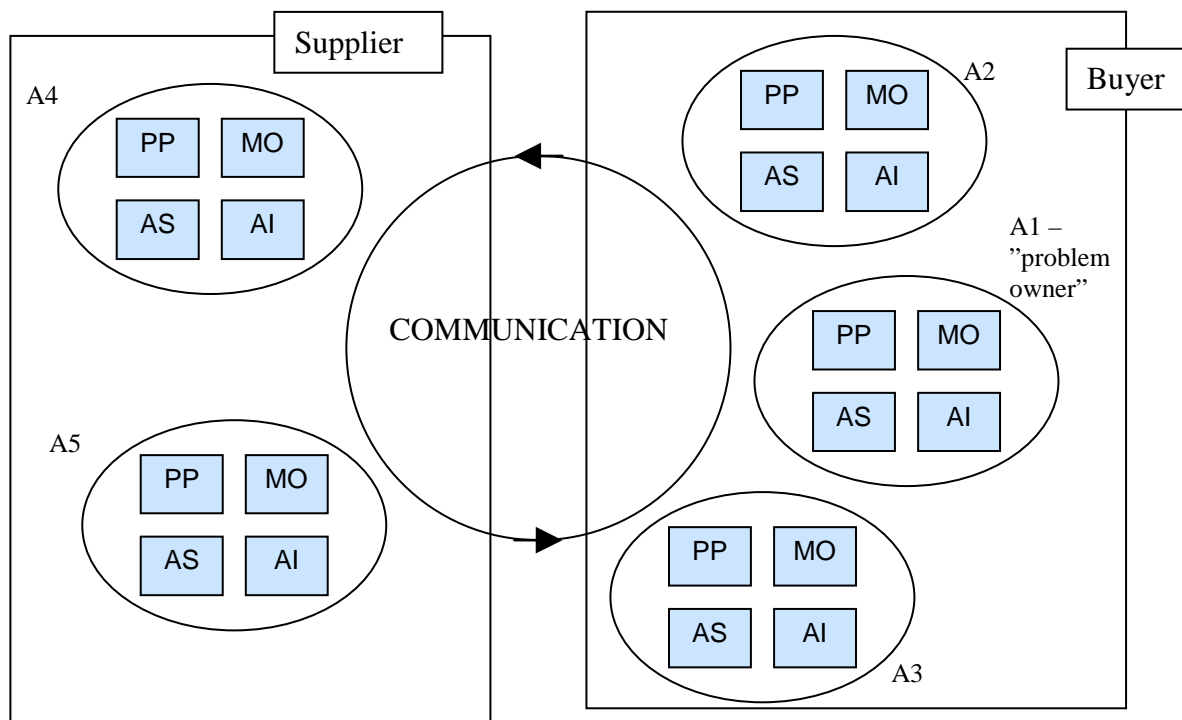
*Result:* The parties continue fighting over this issue until the B3 CEO becomes involved and decides to replace the purchaser. The new purchaser negotiates an agreement with S3, which involves loosening the demands.

## ***Analysis and Discussion***

Analysis of the 3 case problems reveals a clear pattern in the problem solving process. First of all, it is evident that the abilities required for problem solving are typically scattered among different actors in the buyer-supplier relationship. One actor (the problem owner) is responsible for closing the gap. This actor gathers evidence of the problem and sketches out a solution, sometimes by involving colleagues. However, all initial solutions envisioned in the cases required resources and abilities possessed by actors in the selling organization. Driving the abilities were the perceptions and motivations of the involved actors. Hence, perception and motivation was relevant for every actor contributing to solving a problem. The three cases all demonstrated large differences in motivation and/or perceptions affecting the attempted solution negatively.

The separation between abilities along with perceptual and motivational variety made communication a key variable in the problem solving process. Communication between involved actors facilitated information exchange, thereby generating uniformity in perceptions of the problem to be solved. Moreover, communication also had an effect on motivation. The way information was exchanged and the way problems were presented clearly affected motivation of the involved actors. The challenge of communication made problem solving a task of mobilizing relevant actors. Activation of some types of resources (abilities) required management decision making, which again demonstrated the need for communication and mobilization. Based on these findings, a model of problem solving in buyer-supplier relationships, based on the Lang et al. model is proposed (figure 2).





**Figure 2:** A model of problem solving in buyer-supplier relationships (adapted from (Lang et al., 1978)).

The model demonstrates that all actors have abilities of the two kinds that are more or less relevant to solving a specific problem. Further, all actors have a particular perception of a problem and motivation to solve it. The task of the problem owner is to pinpoint the abilities required to solve the problem, followed by communication aimed at ensuring uniformity in perceptions and motivation by all relevant actors.

The cases follow a pattern where the solution initially envisioned by the problem owner in the buying organization is not effectuated because the actors possessing the abilities to solve it do not comprehend the problem and/or are not motivated to solve it. Consequently the gap is not closed. Further attempts at solving the problem, lead to added costs in the form of relational damage, use of additional organizational resources and man-power, incurrence of extra costs, loss of goodwill etc.

Finally, it is evident from the case study that each of the problems can be solved in a variety of ways. These solutions each require different constellations of actors from various organizational units, possessing different abilities.

### ***Managerial Implications***

A number of managerial implications result from the study. From the problem solver's perspective it is vital to ensure that all actors, who contribute to solving the problem 1) perceive the problem and the solution and 2) are motivated to commit their resources and abilities. If perceptions are not equal and motivation is lacking the result is non-closure – the gap is not closed. Managers (problem solvers) therefore need to be able to inform, explain, and specify solutions clearly to all involved actors. And they need to ensure motivation by the same actors – motivation, which cannot be taken for granted. Actors are motivated by different forces, especially in interorganizational relationships between buying and supplying companies with different and sometimes conflicting objectives and interests. Both perceptions and motivation can be difficult to monitor, and lack of these elements

may not show until the damage has been done. Furthermore, problem solving is a highly communicative task, essentially one of mobilizing the constellation of actors required to solve the problem. Problem solvers need to master both the content and the process of communication. Communication coordinates and equates problem perceptions among actors. It also affects motivation. How the communication is facilitated affects the atmosphere and relationship. Hence, problem solving boundary spanners need to possess technical expertise in order to devise solutions and communicate these as well as social capabilities to motivate other involved actors.

Purchasing executives may consider setting up purchasing organizations and procedures for problem solving effectiveness. Many purchasing organizations do not have a defined procedure for problem solving. When problems are discovered (conceived) they are reported to a boundary spanner, who devises a more or less effective solution and tries to mobilize the actor network with or without success. In extreme cases, different constellations of actors try to solve the same problem in different ways simultaneously due to lacking coordination. A problem solving procedure may incorporate the sequential steps to follow in the process, which actors to involve (depending on the problem), information gathering methods, communication channels, criteria for satisfactory closure (solution), back-up plans etc. Individual employees may be dedicated to problem solving. These problem solvers assist category managers in solving pertinent problems. They are empowered to make decisions and demand action. They are knowledgeable about where and with whom knowledge and resources necessary to devise and implement solutions exist and they have communicative and social abilities to generate the necessary buy-in. Most companies experience enough problems to dedicate a full employee to this task.

## **Conclusion**

This paper has attempted to generate knowledge on joint problem solving in buyer-supplier relationships. Findings from three investigated unsuccessful problem solving processes demonstrate the necessity of coordinating perceptions of problems and motivate relevant actors across the interorganizational relationship. Communication becomes a main task in this process because it facilitates information sharing and affects motivation. Problem solving is a particularly challenging task in the buyer-supplier relationship for a number of reasons including differences in strategies and interests, geographical separation, cultural differences, limited visibility and access etc. This task requires problem solving employees with technical and social capabilities as well as an organizational structure and procedures that support the problem solving process. Lack of these measures means that seemingly small problems can become a costly burden to purchasing organizations.

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