CHAPTER 5
General discussion

Partners in a buyer-supplier relationship need to work together in order to assure a smooth flow of products from the supplier to the buyer. Past research has shown that in order to work together successfully, communication patterns between buyers and suppliers need to be of good quality and need to be effective. However, the current literature conveys little about the way that communication patterns actually become of good quality and turn out to be effective. Moreover, despite the fact that it takes two to communicate in a relationship, little is known about the role that buyers’ and suppliers’ distinct views play in realizing effective communications. The majority of studies examine just one party's assessment of the relationship. Having noticed that, the goal of this dissertation was to examine the impact of buyers’ and suppliers’ shared and unshared perceptions on the effectiveness of their communications. The empirical results of our study were discussed in the previous chapters. This chapter discusses the main findings of this dissertation and their theoretical, methodological, and practical implications. Finally, we will discuss the limitations of this dissertation, and argue how they provide opportunities for future research.

MAIN FINDINGS
The results of this dissertation can be summarized into three main findings. The first finding is that buyers and suppliers form similar perceptions of unambiguous attributes, but form dissimilar perceptions of ambiguous attributes (Chapter 2). The second finding is that data obtained from buyers differed from data obtained from suppliers with regard to the way that attributes were associated with each other (Chapter 2). The third finding is that buyers’ and suppliers’ perception differences can have a large impact on the effectiveness of their communications (Chapter 3 and Chapter 4). These findings will hereafter be discussed in more detail.

Perception differences when attributes are ambiguous
Most research that studied buyer-supplier relationships, has relied on data from only one side of the relationship: either data from the buying organisation or data from the supplying organization (Van der Vaart and Van Donk, 2008). Moreover, the majority of
these studies examined very subjective topics such as trust and satisfaction within the relationship, which are explicitly or implicitly treated as shared attitudes between partners. We argued that this is a highly questionable assumption, and that buyers and suppliers may share perceptions of some supply chain attributes, but that their perceptions of other attributes are likely to diverge (see also John and Reve, 1982; Buchanan, 1992; Carter, 2000). Therefore, the present study relied on dyadic data, i.e. data from both partners in a buyer-supplier relationship, in order to examine when buyers and suppliers share perceptions and when not.

In Chapter 2 we argued that the extent to which perceptions differ, is largely dependent upon the degree of ambiguity in the attributes (Powell, Løvallo, and Caringal, 2006; Dunning, Meyerowitz, and Holzberg, 1989; Felson, 1981). Considering what we saw as unambiguous attributes, we indeed found that buyers and suppliers shared similar perceptions of these attributes. Buyers and suppliers shared perceptions of the degree of demand uncertainty in their environment, the frequency with which they communicated, and the media they used while communicating. With regard to what we saw as ambiguous attributes, we found that buyers and suppliers differed significantly in the way they perceived these attributes. Interestingly, suppliers assessed their own performance as significantly better than their buyers viewed the suppliers’ performance. Additionally, suppliers perceived considerably fewer conflicts than their buyers. Further, suppliers perceived greater technology uncertainty in their own industries than buyers did perceive technology uncertainty in the industries of their suppliers. Finally, suppliers consistently estimated buyer dependence on the supplier to be higher than that reported by buyers, but both parties agreed on the extent of supplier dependence. Thus, in contrast to the assumptions of various previous studies, the results from Chapter 2 demonstrate that partners in a buyer-supplier relationship do not necessarily have a shared understanding of all aspects of their relationship.

**Different associations for different groups**

We argued in Chapter 2 that not only buyers’ and suppliers’ perceptions of certain attributes are likely to differ, but that, consequently, data from buyers and suppliers may differ in the way that attributes are associated with each other. To determine whether this actually occurred, we selected technology uncertainty as an example. Previous studies have tested the hypothesis that, with a high level of perceived technology uncertainty, increased communication about technical changes and innovation between buyers and suppliers is needed to improve performance. Testing this hypothesis has led to mixed results (e.g. Fynes, De Búrea, and Marshall, 2004; Leuthesser and Kohli, 1995;
Leuthesser, 1997; Noordewier et al., 1990). We expected that buyers and suppliers do not only experience different degrees of technology uncertainty, but also have different communication needs when the perceived technology uncertainty in the supplier’s industry is high (Heide and John, 1990; Jap, 1999).

In fact, we argued in Chapter 2 that suppliers are the ones who need to adapt their products and processes to the developments in their industry, and will want to communicate with their buyers in order to obtain information. Consequently, we expected and found that if suppliers perceive a high level of technology uncertainty, they are probably better able to realize performance improvements if they communicate frequently with their buyers about product and process adaptations. Unlike suppliers, buyers do not necessarily have to react to technology uncertainty in the supplier’s industry and will therefore probably have much less incentive to exchange information with their suppliers than vice versa. While we expected that in this situation increased communications were not associated with better supplier performance, we found that communication and supplier performance were negatively related in the buyers’ data when buyers perceived a high level of technology uncertainty in the environment of their suppliers. We argued in Chapter 2 that buyers might perceive an increase in communications as disturbing since they are then compelled to think along with their suppliers on what they might essentially see as the supplier’s problem. However, the findings of Chapter 3, discussed in the next paragraph, cast a different light on this explanation.

Together, the results from Chapter 2 showed that even complex interactions can differ significantly when the data of buyers and of suppliers are compared. This illustrates just how far-reaching the consequences can be when dealing with perceptual data on ambiguous attributes. In some cases, as in our example, it can lead to opposing conclusions for different groups.

**Perception differences have impact on communication effectiveness**

Probably the most important finding of this dissertation is that perception differences can have a large impact on the effectiveness of buyers’ and suppliers’ communications. When suppliers perceived greater technology uncertainty than their buyers, increased communications did not result in better supplier performance, whereas when buyers perceived greater technology uncertainty than their suppliers, increased communications were even related with decreased supplier performance. Further, when buyers and suppliers did not agree on the importance of their performance objectives, increased communications were related with conflicts. As follows, perception differences seem to

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General discussion

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either withhold increased communications from becoming effective, as well as decrease the effectiveness of increased communications, all together.

First, in Chapter 3 we investigated how buyers’ and suppliers’ distinct perceptions of technology uncertainty affect the relationship between communication frequency, supplier performance and buyers’ trust. Organizational information processing theory suggests that a fit is desirable between perceived environmental uncertainty and the communication processes between organizations. However, we found that only if both suppliers and buyers perceive significant technology uncertainty then an increase in communication about technical changes and innovation is effective. Under these circumstances, increased communication is associated with higher levels of supplier performance and, consequently, of buyers’ goodwill trust. Communication about innovation is not associated with supplier performance and buyers’ trust, when both buyers and suppliers perceive little technology uncertainty, and when suppliers perceive greater technology uncertainty than their buyers. Conversely, when buyers perceive greater technology uncertainty than their suppliers, our study showed that frequent communication can be detrimental and is associated with lower levels of supplier performance and of buyers’ goodwill trust.

This latter finding was unexpected and we gathered additional data to obtain a better understanding of its occurrence. The picture emerged that increased communications, in the case buyers perceived greater technology uncertainty than their suppliers, were initiated by the buyer and were used to convince suppliers to react to the technical developments in their environment. It appeared that suppliers, for their part, did not share the same concerns as their buyers and were not inclined to react in compliance with their buyers’ wishes. This resulted in lower perceived supplier performance and decreased buyers’ goodwill trust. Although tentative, the explanation obtained from the additional analyses of Chapter 3, may also hold for the interaction effect that was found with the data of buyers in Chapter 2. The fact that communication was negatively associated with supplier performance when buyers perceived significant technology uncertainty, can probably be ascribed to the situation that suppliers perceive significant lower levels of technology uncertainty. It is not that buyers do not want to be disturbed with their suppliers’ uncertainties, but that they seem to want their suppliers to recognize the technology uncertainty and to react to that.

Second, in Chapter 4 we studied how buyers’ and suppliers’ day-to-day communications were influenced by differences in the way they valued their joint performance objectives. Prior research has indicated that an increase in day-to-day operational communications can be linked with misunderstandings and conflicts. We argued however that this will
only be the case when buyers and suppliers attach different importance to their performance objectives. We indeed found that the relationship between operational communication and conflict was moderated by the joint perceptions of buyers and suppliers on the importance of quality, innovation and delivery. Operational communications go together with conflicts when partners value quality, innovation and delivery differently. The relationship between operational communication and conflict was however not significantly moderated by the importance that buyers and suppliers attach to price and flexibility. It thus appears that buyers and suppliers have greater trouble communicating about operational issues when they attach different importance to quality, innovation and delivery than when they view price and flexibility differently. An explanation for these findings may be that achieving quality, innovation and delivery requires more activity and greater communication at the operational level than the realization of flexibility and lower prices. From previous research (Shin, Collier and Wilson, 2000) it appears that the realisation of quality and innovation improvements requires greater coordination at various levels between supply chain partners than the realisation of lower costs and flexibility. Thus, when partners disagree about the importance of quality, innovation or delivery, this can have consequences for interactions at the operational level, whereas disagreements about the importance of price and flexibility seem unlikely to have the same consequences, since these latter issues are probably mainly discussed between purchasers and sales people during contract negotiations (e.g. Halldórsson and Skjott-Larsen, 2006).

The results of Chapter 3 and Chapter 4 emphasize the importance of considering both suppliers’ and buyers’ perceptions when studying communication processes in buyer-supplier relationships.

THEORETICAL IMPLICATIONS

The findings in this dissertation extend previous research in four important ways. First, we demonstrated that studying communication patterns usefully adds to the vast amount of research on communication quality. The overview of studies in Chapter 1 showed that the majority of supply chain studies have examined judgments of communication quality, instead of actual communication patterns between buyers and suppliers. While these studies have proven the importance of effective communications (e.g. Moberg, Whipple, Cutler, and Speh, 2004; Mohr, Fisher, and Nevin, 1996; Prahinski and Benton, 2004; Paulraj, Lado, and Chen, 2008), they provide little insight in the way that communication patterns actually become effective. By examining factual communication patterns between buyers and suppliers, and variables that affect these processes, this dissertation
provides clarifications of the circumstances that render buyers’ and suppliers’ communications effective.

Second, as buyer-supplier relationships are dyadic in nature, they require the diagnoses of both parties’ perceptions in order to understand the outcomes of their cooperation and communication processes. Their distinct positions in the supply chain, and the ambiguities they can be confronted with, may often cause buyers and suppliers to lack a similar understanding of their environment and the objectives they strive for (e.g. Atuahene-Gima and Li, 2004; Daft and Weick, 1984; Daft, 1992; Weick, 1979; Dougherty, 1992; John and Reve, 1982). Team research has demonstrated that shared perceptions among people who cooperate, positively affect their decision making processes, as well as their coordination and communication processes (e.g. Klimoski and Mohammed, 1994; Kozlowski and Ilgen, 2006; Padgett and Wolosin, 1980; Rico, Sánchez-Manzanares, Gil, and Gibson, 2008). This dissertation showed that these team findings can be translated to an inter-organizational context and that the sharedness of perceptions affects communication processes between buyers and suppliers as well. As it is clear that the perceptions of buyers and suppliers often diverge (Buchanan, 1992; Carter, 2000; John and Reve, 1982), the necessity of studying both parties’ perceptions in order to grasp cooperation processes in buyer-supplier relationships, proves all the more important.

Third, this dissertation adds to research on organizational information processing, by showing that it is not uncertainty per se, but rather the perceptions of uncertainty, that affect communication outcomes. Particularly, we showed that buyers and suppliers had to concur on the high level of technology uncertainty in order for their technical communications to be related with supplier performance and buyer’s goodwill trust.

When buyers and suppliers did not agree on the level of technology uncertainty in the environment, communications were not effective or were even negatively related to supplier performance and buyers’ goodwill trust. These findings might explain why research in the field of supply chain management showed mixed results when the context for information-processing was studied (Fynes, De Búrca, and Marshall, 2004; Fynes, De Búrca, and Voss, 2005; Leuthesser and Kohli, 1995; Leuthesser, 1997; Noordewier, John, and Nevin, 1990). Moreover, our results are in line with prior contentions, saying that people’s perceptions become their reality, and that environmental conditions are important to the extent that they are perceived by people and result in distinct organizational actions (Weick, 1979; Daft, 1992).

Finally, this dissertation extends prior research on organizational performance objectives to an inter-organizational setting and to perceptions of distinct performance objectives. We found that buyers and supplier should agree on the importance of quality, innovation
and delivery for their operational communications not to be linked with conflicts. Most research on performance objectives has however been conducted in an intra-organizational setting, examining how various functions within an organisation agree over the competitive priorities to be pursued (e.g. Boyer and McDermott, 1999; Pagell and Krause, 2002). The effects of consensus over performance objectives, or a lack thereof, between organisations have received much less attention. This dissertation provides empirical evidence supporting the idea that consensus over performance objectives is also an important prerequisite for successful inter-organisational relationships. Moreover, we found that buyers’ and suppliers’ consensus over performance objectives should encompass the importance of some particular performance objectives, but not necessarily all performance objectives. This suggest that it is not consensus in itself that prevents operational communications from being linked with conflicts, but that buyers and suppliers should agree over specific performance objectives to secure smooth day-to-day communications.

**METHODOLOGICAL IMPLICATIONS**

This dissertation relied on dyadic data from partners in a buyer-supplier relationship. In this way we were able to show that perception differences are there and, furthermore, that they have serious consequences. These findings have three methodological implications. First, our results indicate that researchers should critically assess which key informants are able to provide most reliable information on supply chain attributes. Specifically where it concerns rather ambiguous attributes, the question is whose perception to rely on, and considered choices should be made. For some attributes, key informants from the supplier side may deliver the most reliable information whereas, for other attributes, the buying side may deliver most reliable data. For example, where data from buyers are probably more reliable in assessing supplier performance, suppliers likely have most experience with the technological uncertainty in their environment and provide reliable data about that. Since research in the field of supply chain management generally focuses on a broad range of - often ambiguous - attributes, many studies will need to involve key informants from both suppliers and buyers in order to reliably test models. Second, we found that data of buyers and suppliers can differ with regard to the associations made between attributes. This suggests that dealing with perceptual data possibly leads to different conclusions for different groups. Accordingly, researchers should take into account that distinct theoretical explanations for buyers and suppliers might be applicable. Up till now, many supply chain studies seem to overlook that their results are applicable to the party they studied, but possibly not apply to the relationship
or supply chain as a whole. In order to assure that models can be generalised to the overall relationship or chain, they should be tested with data from all parties involved.

Third, the results of Chapter 3 and 4 showed that perception differences can have a joint effect on buyers’ and suppliers’ communication processes. As follows, perception differences in themselves can form a critical variable in research models and explain significant variance. Dyadic data gathering may thus not only be necessary to guarantee reliable and valid model testing, but is also required in order to explicitly incorporate buyers’ and suppliers’ perception differences in research models.

To summarize, our findings point to three research models in which data from both buyers and suppliers are required: a) research models that require data from suppliers for some variables, and data from buyers for other variables, b) research models which are tested separately with data from suppliers and with data from buyers, and c) research models that incorporate perception differences and examine their effects.

**PRACTICAL IMPLICATIONS**

Our findings indicate that when buyers and suppliers need to frequently communicate about technical and operational issues, they require shared perceptions of high technology uncertainty and of the importance of particular performance objectives. This outcome has several practical implications which all relate to the question of how one can promote the development of shared perceptions between buyers and suppliers. Research on shared mental models suggests that one way of doing this is to develop specific activities such as site-visits (i.e., buyers and suppliers are exposed to each others operations and practices), structured discussions (focused on relationship strategies and analyses of relevant technological and market developments), and the use of advanced communication technologies (e.g. Klomoski and Mohammed, 1994; Rico, Sánchez-Manzanares, Gil, and Gibson, 2008; Ring and Van de Ven, 1994). These activities facilitate the development of a mutual understanding among the people who cooperate and of shared views on the relationship’s context and strategies. Whereas such activities are clearly essential during the starting phase of a buyer-supplier relationship (Ring and Van de Ven, 1994), it will without doubt be useful to repeat them when the relationship gets mature and the context and strategies evolve.

In buyer-supplier relationships, numerous individual employees are involved, such as sales people, purchasers, material planners, product developers, logistics managers, sales managers and directors. To a more or lesser extent, these employees all need to communicate with their counterparts from the other organization. In fostering shared perceptions between buyers and suppliers, one should thus recognize that many people
may be involved and, to some extent, they should develop a common understanding of what is needed and happening. In realizing shared views on the environment and the importance of particular strategies, it will thus probably be required that the aforementioned activities involve all relevant individual employees from both organizations. In addition, buyers and suppliers in a relationship may want to ensure a certain degree of stability in contact persons working together (Rico, et al., 2008; Bendapudi and Leone, 2002). When contact persons from both companies develop extensive experience in working together, this will probably stimulate the formation of shared perceptions. Turnover of contact persons on the other hand, may lead to a loss of shared knowledge and may oppose the formation of shared perceptions. In the case that employee turnover cannot be avoided, organizations should ensure they retain the knowledge that contact persons possess (Bendapudi and Leone, 2002). Strategies to retain knowledge, such as motivating employees to share information with supervisors and colleagues, the use of technology to record relevant information, and the creation of organizational structures that support information sharing, could be used to secure that partners in a relationship hold their common knowledge and shared perceptions even if contact persons can no longer be retained (Bendapudi and Leone, 2002).

**LIMITATIONS AND FUTURE RESEARCH**

There are several limitations to this dissertation, which provide opportunities for future research. First, this dissertation relies on only one sample, consisting of Dutch production firms. One important reason for this are the extreme efforts that go together with dyadic data gathering. Moreover, the fact that we collected data from multiple respondents in each organization, added considerably to the time-consuming nature of the data gathering process. Notwithstanding the worth of dyadic data, having to rely on one sample may limit the generalizability of our findings. Then again, we expect that the existence of perception differences may not be industry-specific, and preliminary results from a survey study in the Dutch healthcare sector confirm this expectation (Oosterhuis, Van der Vaart, Kamann, and Molleman, 2007). Whether the effects of perception differences we found in this dissertation can be generalized to other industries, should be further investigated. Future research could thus be directed at testing similar hypotheses in other industries, as well as other countries.

Second, the data used for this dissertation were cross-sectional. As a result, causality is not clear, and may not be unidirectional. For example, we argued that increased supplier performance enhances a buyer’s trust in that supplier. Yet, other researchers have found that trust brings about cooperative behaviors such as shared planning and joint
responsibility (Johnston, McCutcheon, Stuart, and Kerwood, 2004) and that trust reduces negotiation costs and the potential for conflict (Zaheer, McEvily, and Perrone, 1998). These beneficial effects of trust may in their turn improve supplier performance. Moreover, the existence of trust or, in contrast, of conflict, may influence the quality of communication processes in such a way that perceptions become more or less shared. Future research with longitudinal designs may be particularly useful for examining such potential bidirectional effects.

Third, notwithstanding this study’s findings that buyers’ and suppliers’ shared perceptions significantly influence the effectiveness of communications, in some instances buyers and suppliers may not be expected to have or develop such mutual views. For example, if buyers and suppliers have opposing goals (i.e. negative outcome interdependence) it may be questionable whether their perceptions and visions can be aligned and add to effective communications. It would be interesting if future studies explore the circumstances that enable or disable the development of shared perceptions between buyers and suppliers.

Fourth, we studied the frequency with which buyers and suppliers communicated about innovation and operational issues. Other aspects of communication patterns may also play an important role in establishing supplier performance, increasing buyers’ trust, and reducing conflicts. For example, the findings of Chapter 4 suggest the need to examine in greater detail the communication processes between individuals who work together in buyer-supplier relationships. It seems particularly useful to identify the interpersonal behavior of the people who communicate. Frequent communications between buyers and suppliers might be very effective when persons act in a friendly and helpful way, but turn out to be ineffective when people behave indifferently or even hostile. Models of interpersonal behavior may further help explain why communications between buyers and suppliers bring about performance improvements and trust, or why they end up in conflicts (Leary, 1957; Kiesler, 1983). Furthermore, the additional interview results from Chapter 3 indicate that it is important to know who is taking the initiative to communicate. In line with this, Mohr and Nevin (1990) argued that bidirectionality of communication flows, or the degree that both partners take the initiative to communicate and share information, may have a significant impact on the effectiveness of communications. Moreover, future research could examine the way that formality of communications influences supplier performance, trust and conflicts (Mohr and Nevin, 1990) and whether formal, i.e. structured and routinized communications suffer from perception differences in the same way as informal, i.e. unstructured and spontaneous, communications. Together, studying all these aspects of communication may further
enhance our understanding of the effectiveness of communication patterns between buyers and suppliers.

Fifth, our focus on perceptions of technology uncertainty and of performance objectives, does not preclude the importance of other moderating variables. For instance, the effectiveness of communication patterns may be influenced by aspects such as interdependence and power differences (Benton and Maloni, 2005; Gulati and Sytch, 2007; Ireland and Webb, 2007; Kumar, Scheer, and Steenkamp, 1995; Maloni and Benton, 2000) or demand and supplier uncertainty (Chen, Paulraj, and Lado, 2004; Fynes, De Búrca, and Marshall, 2004), and hence, both parties’ perceptions thereof. Future research could include these contextual factors in order to determine their impact on buyers’ and suppliers’ effective communications.

Finally, this dissertation relied on a mono method study consisting of merely survey data from key informants. This may cause concerns over the existence of random measurement errors and systematic measurement errors, i.e. common method biases, in our study (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003). However, we have several reasons to believe that both measurement errors are not a serious concern in our study and did not influence our findings. First, we relied on multiple key informants in each organization to provide information on the buyer-supplier relationship. In this way we were able to ensure that constructs were assessed reliably and that random measurement errors were unlikely (Bagozzi, Yi, and Phillips, 1991). Further, we used data from different sources (either from the buyer or the supplier, or from both the buyer and the supplier) for the independent, dependent and moderator variables. This makes the existence of common source bias unlikely. Furthermore, the significance of our complex two- and three-way interaction effects are unlikely to be an artifact of common method bias, as the key informants are unlikely to have consciously theorized the moderated relationships when responding to the questionnaire.

Nevertheless, we do see value in future research collecting more objective data such as data on production lead-times, product life cycles, the degree that products are made to order versus made to stock (Ramdas and Spekman, 2000; Randall, Morgan, and Morton, 2003) or data on changes in industry sales (which can be used to indicate environmental uncertainty: Dess and Beard, 1984; Keats and Hitt, 1988). These data could examine whether perception differences between buyers and suppliers are more apparent in some environments and industries than in others. For example, in rapidly changing industries, differences in perceptions might be more common than in rather stable and mature industries (Daft & Macintosh, 1981). Moreover, one could test whether perception differences are more harmful in one situation than in another. For instance, one could
imagine that perception differences are more harmful for communication patterns between buyers and suppliers in a make to order situation where much coordination is required, than for partners whose products are made to stock and coordination processes are relatively simple.

**CONCLUDING REMARKS**

This dissertation addresses the crucial role that buyers’ and suppliers’ perceptions play in enhancing the effectiveness of communications in buyer-supplier relationships. We not only showed that perceptions of buyers and suppliers can systematically differ, but also that such perception differences may significantly influence the effectiveness of communications between buyers and suppliers. Most studies in the field of buyer-supplier relationships have examined either the perceptions of buyers or the perceptions of suppliers, thereby neglecting the possibility that exactly the *combination* of both perceptions may explain much of the success of buyer-supplier cooperation processes. As this dissertation has demonstrated the relevance of studying both perceptions in buyer-supplier relationships, it may inspire future researchers to explore buyers’ and suppliers’ views in more detail.