

# **Role and outcome of performance measurement in horizontal alliances: An empirical examination**

by

Dipl.-Betriebsw. (FH) Thorsten Schäffler, MBA

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**First advisor:** Prof. Dr. Carl Marcus Wallenburg

**Second advisor:** Prof. Dr. Dr. h.c. Jürgen Weber



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# **1 Introduction**



## **1.1. General problem exposition**

In today's highly competitive business environment, one central topic is the collaboration of companies in strategic alliances (Dekker 2004; Kale and Singh 2009; Min et al. 2005). A strategic alliance is defined as a voluntary arrangement between two or more firms "involving [the] exchange, sharing, or co-development of products, technologies, or services" (Gulati 1998, p. 293) to "pursu[e] mutual strategic objectives" (Das and Teng 2003, p. 279). Manufacturing and services companies alike are increasingly using such strategic alliances as one means to cope with the steadily increasing complexity of supply chains and the growing challenges they face in today's competitive environment (Bruner and Spekman 1998; Kale and Singh 2009). The underlying motives triggering this trend are quite diverse and range from strengthening their competitive positioning (Kogut 1991), increasing their efficiency (Ahuja 2000), and entering into new markets (Garcia-Canal et al. 2002) to acquiring external resources (Lehtinen and Ahola 2010). The set-up of these alliances can either be vertical, such as in a buyer-supplier relation, or horizontal, on which this dissertation focuses on. An alliance can be defined as being "of a horizontal nature if an agreement or concerted practice is entered into between companies operating at the same level(s) in the market" (European Union 2001). As recent research (e.g., Schmoltzi and Wallenburg 2011) highlights, this alliance form is particularly important, as 57% of, in this case, logistics service providers (LSPs), engage in horizontal alliances to face market challenges and to stay competitive.

However, the establishment of strategic alliances in general, and horizontal alliances in particular, does entail difficulties: First, when alliance partners stem from different regions and possess differing organizational cultures, friction among the partners is likely (Lin and Germain 1998; Nguyen 2011). Second, management becomes more difficult than in an individual company as in alliances, decisions cannot be made by a single company and organizational processes need to be aligned among the partners (Park and Ungson 2001). Third, the

idiosyncratic nature of horizontal alliances adds additional complexity. Compared to vertical alliances, horizontal alliances imply co-opetition (Cruijssen et al. 2007b; Wilhelm 2011) – the simultaneous existence of cooperation and competition among the partners – and reduced interdependency, because the partners typically don't rely on the partner's output for their own input (Rindfleisch 2000). As these horizontal alliances often comprise more than two partners, complexity is even further increased (Schmoltzi and Wallenburg, 2011). These traits illustrate that horizontal alliances, besides all benefits and advantages, pose additional challenges, and thus are difficult to manage.

Against this background, research into the management of horizontal alliances is of great importance. Even though alliance research has been conducted quite extensively over the last decades, the focus has been on vertical alliances rather than on horizontal ones. Still in 1999, Sheth and Sisodia (1999) noted while good theories on vertical alliances existed, this was not the case for horizontal alliances. Over the course of the last decade, however, research in horizontal alliances has considerably gained momentum through work conducted by Rindfleisch (2000), who examined the concepts of trust and interfirm cooperation and Carbone and Stone (2005), who focused on growth and relational strategies of horizontal alliance. Further, Cruijssen et al. (2007a, 2007b) provided a literature review on horizontal LSP alliances as well as a study on their opportunities and impediments. A first overview over the motives, structure, and performance, based on empirical research, was provided by Schmoltzi and Wallenburg (2011). Rather recently, further research has been published with a focus on the actual management of horizontal LSP alliances such as conflict management (Wallenburg and Raue 2011), the effects of operational governance on cooperation commitment and effectiveness (Schmoltzi and Wallenburg 2012), and the role of governance mechanisms in fostering innovation (Steinicke et al. 2012). Even though that research generated first insights into

the management of horizontal alliances, there are still many gaps that remain to be addressed – one of them being performance measurement (PM).

PM represents a central component of individual companies as well as of alliances (Bititci et al. 1997). PM systems serve as means of monitoring and maintaining organizational control (Nanni et al. 1990). The processes involved support both, the individual company as well as the respective alliance, to pursue strategies that lead to the achievement of goals and objectives (Brignall and Ballantine 1995). In recent years, there has been growing interest in PM systems (Chenhall 2005; Ferreira and Langfield-Smith 1997; Malmi and Brown 2008; Otley 2009). However, this research mainly focuses on PM of individual companies. In 2004, Schmitz and Platts (2004) still stated that "research on the practice of inter-organizational performance measurement [...] is rather rare" (p. 231). Not much progress has been achieved since then as recently Cousins et al. (2008) as well as Forslund (2012) repeated this fact. Most of the remaining research that actually focuses on PM in an alliance setting is "either theoretical in nature or based on simple supply-chain case studies" (Bititci et al. 2011, p. 9). Therefore, this dissertation aims at developing research in the domain of PM in horizontal alliances.

In a literature review on PM and alliances, Lehtinen and Ahola (2010) analyzed corresponding articles that were published between 1986 and 2007. In their analysis they focused on issues that influence alliance success. Among the most mentioned and discussed topics were (1) congruent goals, (2) opportunistic partner behavior, and (3) partner conflicts. This dissertation revolves around all three topics to provide answers on how PM enables successful management of horizontal alliances.

## 1.2. Outline of the dissertation

Corresponding to the three outlined issues influencing alliance success, this dissertation consists of five chapters. Thereof, chapters 2, 3, and 4 are based on essays that are aimed at publication in international logistics and supply chain journals.

Following this introduction, chapter 2 elaborates on the effectiveness of partner involvement in the performance measurement process (PMP) and of information sharing of performance data in establishing congruent goals among alliance partners. Common goals have been deemed to be an important facilitator for alliance success since they provide direction for the actions of the alliance partners (Jap and Anderson 2003). However, due to the specific characteristics of an alliance, congruent goals cannot be assumed to be given as in horizontal alliances, resulting from the multilateral set-up (Schmoltzi and Wallenburg 2011) and co-opetition (Wilhelm 2011), disagreements concerning the direction of the alliance are likely. Thus, finding ways to align goals is very important for the alliance to be successful (Jap and Anderson 2003). In this chapter, the PMP is analyzed with regard to goal alignment. For this purpose, the concept of mutuality, consisting of partner involvement and information sharing (Brinkerhoff 2002; MacNeil 1980; Simatupang et al. 2002), is combined with the PMP. Finally, this chapter assesses the performance effect of aligned goals. Consequently, the following research question is addressed:

***RQ 1:** How does partner involvement in the PMP and the sharing of PM data help in establishing congruent goals and what implications does the latter have on alliance performance?*

Besides goal congruence, another factor for alliance success is the control of opportunism (Childe 1998; Lehtinen and Ahola 2010). Chapter 3 addresses this issue by researching the potential of complementing relational governance with formal control mechanisms to

curb opportunistic tendencies within the alliance. Curbing opportunism is important as opportunistic actions by alliance partners have been identified as one major reason why alliances underperform or even fail (Das 2004; Das and Rahman 2010). Horizontal alliances are especially prone to opportunistic behavior due to their idiosyncratic nature (i.e., co-opetition, multilateral set-up, and low interdependence) (Das and Teng 2000; Rindfleisch 2000; Schmolzi and Wallenburg 2011). In line with Transaction Cost Economics (TCE), previous research has demonstrated that relational governance as well as formal control mechanisms function as means to mitigate the exchange hazards and to reduce opportunistic partner behavior (Anderson and Weitz 1992; Heide et al. 2007; Poppo and Zenger 2002; Williamson 1985). However, research with respect to their interplay has yielded disperse results (e.g., Kale and Singh 2009; Sundaramurthy and Lewis 2003). On the one hand, some researchers propose a substitutive functioning (e.g., Larson 1992; Gulati 1995; Wang et al. 2011), while on the other hand, others argue that they function in a complementary fashion (e.g., Aalbers 2012; Cannon et al. 2000; Poppo and Zenger 2002). According to corresponding calls for research by Rindfleisch et al. (2010) and Gelderman and Vermeulen (2012), who request further investigation on governance with a focus on the application of more than one governance form, chapter 3 is dedicated to provide answers to the interplay of relational governance and formal control mechanisms and the respective effects on partner opportunism in the alliance by applying social contract theory (Dunfee et al. 1999). Further, the effect of partner opportunism on alliance performance is analyzed. All together, this leads us to the second research question of this dissertation:

***RQ2:** To what extent can relational governance in the form of joint action in PM effectively be complemented with formal control mechanisms in order to curb opportunistic partner behavior, and hence, improve the outcome of the alliance.*

A third component identified by Lehtinen and Ahola (2010) that can impede the success of an alliance is conflict. Thus, chapter 4 is focused on providing insights into approaches for preventing that conflict potential manifests itself into actual conflict in horizontal alliances.

The complexity inherent to a horizontal alliance due to its multilateral set-up, which implies that numerous interests and opinions are involved, as well as the ongoing interactions among the alliance partners hold potential for conflict (Mohammed and Agnell 2004; Wallenburg and Raue 2011). In this respect, PM is an area where conflict is prone to surface as it involves processes such as defining metrics and targets, and conducting measurement and subsequent performance analysis, in which disagreements are inevitable as potentially differing ideas of the alliance partners clash. However, PM also builds ground for countering the development of conflict when it embraces group processes such as joint action and information sharing, which have been found to be effective methods to work against the emergence of conflict (Korsgaard et al. 2008; Moye and Langfred 2004). Even though conflict is a major threat to alliances, research has mainly focused on conflict types and their outcome effects (e.g., Jehn 1997a; Parayitam and Dooley 2011) or post-manifestation topics such as conflict management that picks up when conflict has already emerged (e.g., Parry et al. 2008; Rahim 2002), leaving aside conflict prevention in the first place. To close this gap in research, chapter 4 addresses the potential of group processes in PM for reducing the risk of conflict manifestation by including the contextual factor of the alliances' power structure, which has been identified to influence conflict in an alliance setting (Tjosvold et al. 2001). Chapter 4, thus, answers the third research question:

***RQ3: How can the application of group processes in alliance PM preventively hinder the emergence of conflict depending on the power structure inherent?***

After considering the potential of mutuality in the PMP for aligning goals among the alliance partners in chapter 2, the interplay of relational governance and formal control mechanisms to mitigate opportunistic partner behavior in chapter 3, and the potential of group processes in PM to pro-actively prevent the emergence of conflict, this dissertation concludes with chapter 5, which summarizes the findings, presents limitations, and provides avenues for further research.

## **2 Mutual performance measurement as driver of goal congruence and alliance performance in horizontal service alliances<sup>1</sup>**

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<sup>1</sup> This chapter is based upon the eponymous unpublished working paper co-authored with Carl Marcus Wallenburg.



## 2.1. Introduction

As supply chains become increasingly complex, customers' demands grow, and competition rises, companies in various service industries face the question of how to adapt strategically to these new circumstances. To respond to dynamic market needs, service providers (SPs) are increasingly forming horizontal alliances with other SPs. For example, as of 2011, more than 50% of logistics service providers (LSPs) cooperate horizontally with other LSPs (Schmoltzi and Wallenburg 2011). They consider such alliances as a means to improve competitiveness, enhance market penetration, or acquire additional competencies (Carbone and Stone 2005; Cruijssen et al. 2007; Schmoltzi and Wallenburg 2011).

Although forming such horizontal service alliances has become more common, their advantages do not come without challenges: they add complexity at other ends that makes their management difficult (Almeida et al. 2011; Gulati and Singh 1998; Park and Ungson 2001; Wilhelm 2011). One reason for this effect is the idiosyncratic nature of horizontal alliances. Although the involved SPs work together to pursue overall alliance goals, they also compete and pursue their own goals in the light of being (potential) competitors in the same industry. This situation leads to inherent tensions (Bengtsson and Kock 2000; Rindfleisch and Moorman 2001; Ritala et al. 2009; Zeng and Chen 2003). Furthermore, service firms have few methods to protect against knowledge-spillover; their horizontal alliances incorporate higher management complexity and are often formed by companies with different or even conflicting individual goals (Rey-Marston and Neely 2010; Steinicke et al. 2012). Consequently, a major challenge is to align goals to enhance performance (Bruner and Spekman 1998; Witt et al. 2001; Yan 2011) by creating unity of effort among the partners working along similar lines. The considerable difficulty of aligning goals, which is also observed in easier-to-manage vertical alliances, is one reason a substantial number of alliances either perform below expectations or, estimates range between 40% to 70%, even fail (Das and Teng

2000; Park and Ungson 2001; Taylor 2005). Difficulties are even stronger in horizontal alliances due to the heightened competitive tension, a more complex set-up, and generally lower interdependence among these companies (Rindfleisch 2000; Schmoltzi and Wallenburg 2011; Wilhelm 2011).

Based on conceptual deliberations and case-based research in vertical supply chain settings (Bititci et al. 1997; Lehtinen and Ahola 2010; Neely et al. 1995), various scholars have identified performance measurement (PM) as an instrument to align goals and facilitate unity of effort among cooperating partners (Lehtinen and Ahola 2010; Neely et al. 1995). PM consists of several process steps, including defining metrics, setting targets, measuring operations, and evaluating performance (Ferreira and Otley 2009; Forslund and Jonsson 2007; Green and Welsh 1988). These performance measurement processes (PMP), thus, become a foundation to establish a common understanding and facilitate the increased alignment of diverging goals.

Yet, the question of how PM in a horizontal alliance should be organized remains unanswered. Whereas qualitative research (e.g., Papakiriakopoulos and Pramataris 2010) has indicated that a mutual approach of alliance partners in the respective PMP may improve performance, its effect on goal congruence has not been researched so far.

Another research gap exists regarding the outcome of goal congruence. Whereas congruent goals are assumed to be beneficial, prior studies have focussed mainly on outcomes such as increased coordination and cooperative behaviour, or reduced conflict in alliances (Holcomb and Hitt 2007; Jap 1999; Luo 2002; Parkhe 1993). Furthermore, the limited research that focuses on performance effects has viewed performance either on the individual firm level (e.g., Flynn et al. 2010; Stephen and Coote 2007) or in a vertical buyer-supplier relationship (Jap and Anderson 2003), while neglecting how goal congruence drives the per-

formance of horizontal alliances. The latter is of particular interest against the background of the idiosyncrasies of horizontal alliances. Here, a unity of effort resulting from congruent goals can be expected to have a stronger impact on alliance performance than for vertical alliances.

To address these research gaps the present study integrates the concept of mutuality (Brinkerhoff 2002; MacNeil 1980; Simatupang et al. 2002) into the PMP and shows how the mutuality components of *partner involvement* and *information sharing* contribute to creating goal congruence in horizontal service alliances. Furthermore, we also hypothesize that goal congruence is an important driver of alliance performance in horizontal service settings and hence of utmost importance as this alliance form represents one major means to meet current and future market challenges. Our conceptual theory-refinement perspective is complemented by empirically testing the hypotheses based on responses from 197 LSPs engaged in horizontal alliances. As such, the present study's aim is to enhance the theoretical understanding regarding antecedents and effects of goal congruence in horizontal service alliances.

## **2.2. Conceptual framework**

### **2.2.1. Idiosyncrasies of horizontal alliances**

As outlined in the introduction, the establishment of horizontal alliances in the logistics ambit but also in other industries is gaining momentum (Crujssen et al. 2007; Schmoltzi and Wallenburg 2011). Horizontal alliances considerably distinguish themselves from vertical alliances as they are characterized by co-opetition — the simultaneous existence of cooperation and competition among alliance partners (Das and Teng 2000; Wilhelm 2011), often by multilateralism – meaning alliances between three or more firms (Schmoltzi and Wallenburg 2011), and generally by lower interdependencies (Rindfleisch 2000) as the individual companies are less dependent on the partners' output as their own input compared to a buyer-

supplier setting (Wallenburg and Raue 2011). One example for a large horizontal alliance among logistics SPs is "The Global Partnership Program" of Lufthansa Cargo, an alliance of twelve logistics companies with the aim to foster cooperation among its members for capacity planning, a reduction of transaction costs and promotion of key industry issues (Lufthansa Group 2011). Other examples are collaboration with respect to route planning or purchasing (Crujssen et al. 2007a; Schmoltzi and Wallenburg 2011).

### **2.2.2. Goal congruence**

To examine goal congruence, this research will derive how mutuality in PMP facilitates aligning goals and thus their congruency in horizontal service alliances. We will also investigate how congruent goals, in turn, facilitate alliance performance. Here, goal congruence is understood as the extent to which the goals pursued by different partners of an alliance are similar (Angeles and Nath 2001). In this sense, goal congruence is a state that can be achieved through a process of aligning the different goals of partners involved in an alliance.

Extant research has identified that no matter what the specific goals are, the chances of being successful increase when the expectations and goals of the involved partners are aligned (Bruner and Spekman 1998; Cao et al. 2010; Goffin et al. 2006; Jap 2001). Aligned goals imply that the partners share common interests that in turn increase motivation to work together and support others, even if additional investment is required (Holcomb and Hitt 2007). Furthermore, congruent goals have been found to foster relationship quality in an alliance setting that reduces the incentive for opportunistic behavior (Jap and Anderson 2003). Thus, congruent goals facilitate unity of effort and create collaborative advantages, making the cooperative venture more successful and eventually increasing the benefits for all partners (Cao and Zhang 2011).

At the outset of an alliance, however, full congruency of goals does not depict reality as these inter-organizational relationships are often formed by companies with differing and, in some cases, even conflicting goals, especially in co-opetitive settings (Brewer and Speh 2000; Lee et al. 1997; Rey-Marston and Neely 2010). In horizontal alliances, SPs pursue a broad spectrum of goals from improving service quality and enhancing market share to increasing productivity and access to financial resources (Cruijssen et al. 2007a; Schmoltzi and Wallenburg 2011). This broad spectrum, combined with the fact that these horizontal alliances—compared to vertical alliances—usually involve three or more SPs induce incongruent goals. If this situation is not resolved or at least substantially eased, diverging goals will cause the SPs to pull the alliance in different directions as actions that advance the interest of one partner might not advance the ones of the other partner (Holcomb and Hitt 2007). Consequently, SPs in horizontal alliances need to be concerned about goal congruency.

### **2.2.3. Approaches to enhancing goal congruency**

In the context of horizontal service alliances, various approaches to establishing goal congruence among partners exist. In the present research we focus on (1) the performance measurement process (PMP), and (2) the mutual actions of alliance partners. We also combine these concepts to draw conclusions regarding the high potential a mutual PMP has for establishing goal congruence.

#### Performance measurement process

Hatry (1999) noted, “The central function of any performance measurement process is to provide regular, valid data on indicators of performance outcomes” (p. 17). An inherent element in this process is goals, as PM entails comparing actual performance with previously defined targets. To allow for this process, clarity concerning goals and their measurement must be established.

Based on the management control literature, we subdivide the PMP into two main phases with two process steps each (Ferreira and Otley 2009; Flamholtz et al. 1985; Forslund 2007; Green and Welsh 1988; Malmi and Brown 2008). The first phase, which we term “*ex-ante*”, refers to the two-step process of defining metrics and setting targets that occur before the alliance activities are performed and measured. The second phase, “*ex-post*”, comes after the pre-operational phase and is comprised of actually measuring operations and evaluating performance (Forslund 2007; Green and Welsh 1988).

***Ex-ante phase.*** The first process step of the ex-ante phase of the PMP is the *definition of metrics* in a twofold way. First, key objectives of the alliance need to be identified so that, second, the corresponding performance metrics can be agreed upon (Lynch and Cross 1991; Neely et al. 1997). Performance metrics are quantifiable measures, either financial or nonfinancial that reflect the particular characteristics of the alliance operations (Lohman et al. 2004) and are used to help the organizations define and measure success. Subsequently, in the second ex-ante process step, the partners must *define actual goal levels* for each of the agreed upon metrics (Basu 2001; Soltani et al. 2004).

***Ex-post phase.*** The first process step of the ex-post phase of the PMP is the *operational measurement* regarding the alliance’s business processes. In the present research, measurement is understood as collecting performance data and assigning numbers to objects according to rules (Flamholtz 1979). Properly conducted measurement builds the foundation for the last process step, performance evaluation (Forslund and Jonsson 2010). After collecting performance data, a *performance comparison* is made between actual performance and target goals to determine deviations from targets (Soltani et al. 2004), which then triggers corrective actions if necessary (Ferreira and Otley 2009; Green and Welsh 1988; Langfield-Smith 1997).

### Concept of mutuality

In the context of a horizontal alliance, in which often multiple companies (Schmoltzi and Wallenburg 2011) are working directly together to pursue alliance goals, the concept of mutuality takes on a central role (Campbell 1997; MacNeil 1980). Its role can be expected to be far more important in horizontal alliance settings compared to vertical ones for the fact of lower partner interdependency. A vertical alliance setting is often characterized by a dyadic structure (i.e., buyer and supplier), high dependency, and unequal distribution of power as one partner is more dependent on the other (Rindfleisch 2000). This leads to a more authoritative relationship in which unilateral directives issued by the partner in power are more common, counteracting a mutual approach. In a horizontal setting, however, in which the interdependency is generally lower (Rindfleisch 2000), the latter approach would lead to discords within the alliances as the partners are less dependent on the partners' output to become their own input (Rindfleisch 2000). Hence, a mutual approach that grants the partners comparable rights and responsibilities is favourable (Schmoltzi and Wallenburg 2012).

According to MacNeil (1980), "the idea of mutuality refers to the notion of combining efforts among independent firms" (Simatupang et al. 2002, p. 290). It enhances the intensity of collaboration between companies, which results in improved coordination of important business activities (MacNeil 1980). Within the concept of mutuality, Brinkerhoff (2002) identified the degree to which 1) partners are involved and integrated in alliance activities as well as to which 2) timely and accurate information is exchanged as important aspects. Simatupang et al. (2002) stressed their special importance and described the first aspect as to how different partners collaborate and "manage interdependencies between activities" (Simatupang et al. 2002, p. 292), whereas the latter one is described as establishing a common understanding via information sharing.

In alliances, *the involvement of partners* refers to the extent to which alliance partners jointly engage in alliance activities. The integrative approach of jointly conducting alliance-related activities enables the involved partners to coordinate efforts based on constant exchange in which underlying motives are interchanged (Monczka et al. 1998). This process eventually leads to a better understanding of individual goals and motives (Cousins et al. 2008).

*Information sharing* refers to sharing critical and proprietary information between the involved partners (Mohr and Spekman 1994; Moore 1998) with the aim to establish “consistency of reasoning across organization borders through diffuse common understanding” (Simatupang et al. 2002, p. 293). Rather than hoarding information and releasing it only when solving problems, firms need to share information about plans and best practices with alliance partners to prevent problems and reach or exceed pre-defined alliance goals (Stank et al. 1999). Sharing information facilitates transparency about the partners’ issues, possible concerns, intentions, and goals (Dekker 2004), and thus improves coordination and planning (Lee et al. 2000; Yuchtman and Seashore 1967).

#### Performance measurement and the concept of mutuality

Prior research on mutuality has focussed more generally on involving partners and information sharing in vertical supply chain activities, mostly in the manufacturing sector (Uusipaavalniemi and Juga 2009). Here, researched topics include process (e.g., Koufteros et al. 2005, 2007; Stock et al. 2000) or information integration (e.g., Jayaram and Tan 2010; Paulraj et al. 2006; Uusipaavalniemi and Juga 2009) from either the supplier or the customer perspective. Such partner involvement and information sharing improves relationship performance (Mohr and Spekman 1994), firm performance (Droge et al. 2004; Vickery et al. 2003), and new product development performance (Koufteros et al. 2005, 2007).



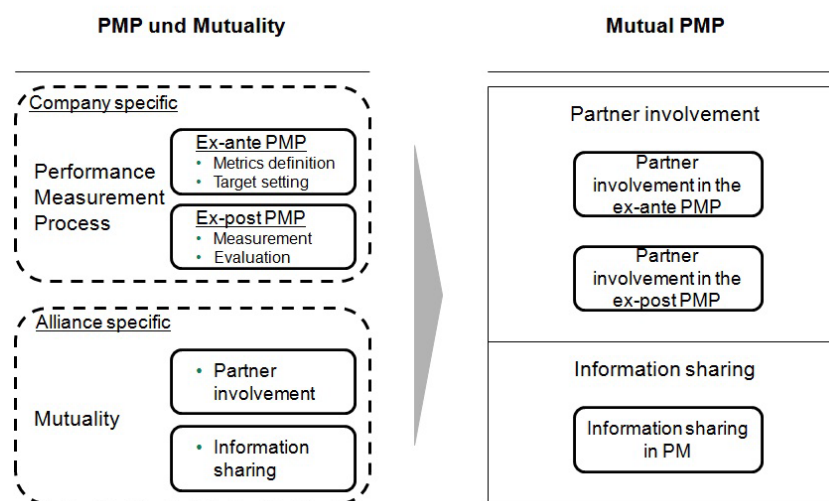
However, research concerning mutuality with respect to the PMP is still at a very early stage. While Forslund and Jonsson (2007) explored “how to integrate the PMP of delivery service in customer/supplier dyads” (p. 548), Papakiriakopoulos and Pramatarı (2010), based on case study research, demonstrated the challenges when developing a common PM system in collaborative supply chains. Further, Forslund and Jonsson (2010) conducted descriptive survey research to gauge the status quo and importance of integrating the PMP of on-time delivery with suppliers.

Previous research to date has not tested relationships between the concept of mutuality and PM, even though several calls for research have pointed out a lack of knowledge on PM in collaborative organizations in general (Bititci et al. 2011) and regarding partner involvement (Forslund and Jonsson 2007, 2010), collaboration, and information sharing in the PMP in particular (Papakiriakopoulos and Pramatarı 2010).

Because we are viewing the PMP in an alliance context rather than one of a single company, we extend the ordinary consideration of a PMP consisting of two phases by the mutuality domains to account for the special requirements of the horizontal alliance environment. In this specific setting, the first aspect of mutuality—partner involvement—implies integrating the alliance partners into the process of PM. This entails mutually defining and selecting performance metrics that are adequate to measure the joint activities, as well as involvement in formulating targets for these metrics for the ex-ante phase of the PMP. In the ex-post phase of the PMP, partner involvement refers to actively participating in the actual operational PM and subsequent evaluation of performance results.

Although involving partners into these two phases of the PMP entails a certain amount of information exchange between alliance partners, the second domain of mutuality—information sharing—suggests more elaborate information exchange. It emphasizes that the

information flow among the companies plays an important role in a partnership (Holmberg 2000; Zhou and Benton 2007). When considering the PMP and its potential to align goals, a reliable and constant flow of information is essential, because the PMP is an ongoing process that requires comprehensive and timely information concerning the business activities. The transparency generated by exchanging performance information enables the partners to leverage their knowledge more effectively, allowing them to adapt if they realize that their goals are at odds with that of the alliance. This means that involving partners in the PMP needs to be complemented by information sharing that covers the full PM system (i.e., information concerning results, requirements, and PM issues). Fig. 2-1 illustrates how we combine the two goal alignment building blocks of the PMP with its two domains (ex-ante PMP and ex-post PMP) and mutuality, with its two domains (partner involvement and information sharing) to become the concept of mutuality in PMP.



*Fig. 2-1: Concept of mutuality in the PMP*

## 2.3. Hypotheses development

### 2.3.1. Goal congruency by partner involvement in the PMP

As outlined, the PMP entails defining metrics and goal levels in its ex-ante phase. Both activities, which have been identified by Flamholtz et al. (1985) as main vehicles to promote

goal congruence, require intensive reflections regarding underlying objectives and goals and how those can be captured and managed most effectively via performance metrics. Involving other alliance partners in selecting the metrics and setting the targets at the beginning of the PMP helps create transparency and a mutual understanding of the motives and objectives of the other partners, and thus creates the conditions for establishing congruent goals (Rai et al. 1996). If deviations between the partners' objectives become apparent, a discussion of the individual goals is triggered that results in decisions of how diverging individual interests may be compromised to facilitate the rapprochement of objectives (Arino and de la Torre 1998; Doz 1996).

Various authors (e.g., Papakiriakopoulos and Pramataris 2010; Simatupang and Sridharan 2002) that have examined vertical relationships stress the importance of the collaborative process when deciding on what to measure and how to measure as this creates consistency across the alliance concerning the metrics used, which in turn ensures goal alignment (Lehtinen and Ahola 2010). With the multilateral set-up of horizontal alliances, these processes to establish consistency are of even greater importance as more individual interests have to be balanced. Because misaligned performance measures are a source of tension in alliance relationships (Rey-Marston and Neely 2010), the mutual approach in this early PM phase is particularly important because similar definitions of metrics are needed to guarantee acceptance (Forslund 2010, 2012). Furthermore, integrating the other partners into the PMP establishes close links between them (Argryis 1964; Flamholtz et al. 1985; Likert 1967); signifies "commitment to and interest in outcomes" (Saxton 1997, p. 446); and creates a social framework of interaction. Such a set-up reduces role ambiguity and clarifies complex interdependencies. Consequently, it facilitates aligning goals and enhancing congruence of goals (Stephen and Cote 2007). Thus, we posit that involving partners into the ex-ante PMP will be

an effective way to level out inconsistencies and foster goal congruence among the cooperating SPs.

*H<sub>1</sub>: In horizontal SP alliances, partner involvement in the ex-ante PMP has a positive effect on goal congruence.*

While the ex-ante phase of the PMP lays the foundations for congruent goals, this can be complemented by partner involvement in the ex-post phase of the PMP (i.e., in measuring and evaluating performance). Mutual measurement requires a significant alignment of data structures among the partners (Holmberg 2000). To accomplish this, alliance partners must discuss what goals they pursue to determine what must be measured to implement the measurement processes accordingly. Based on this, a mutual evaluation of performance results can be conducted. Here, other than assessing individual performance, the SPs need to open their books to each other and exchange performance information to determine the success of the alliance together. This process helps the SPs to put the joint accomplishments into perspective with respect to the previously agreed objectives. Consequently, when measurement and analysis is performed in a mutual and integrated manner, it helps the alliance partners understand what happens in the alliance and why it happens (Holmberg 2000). This, in turn, is the basis for adjusting and aligning individual goals when goal conflicts become obvious.

Thus, creating congruent goals is facilitated by involving alliance partners during the second phase of the PMP. However, while involvement can be derived to be positive for both PMP phases (i.e., ex-ante and ex-post), we posit that the effect stemming from the ex-ante phase will be stronger, because it lays the foundations of the PMP and directly concerns conceptual issues, namely, discussing metrics and goals. In contrast, during the ex-post phase, partners are merely involved in the execution, providing them with fewer opportunities to influence and align goals. Hence we hypothesize:

*H<sub>2a,b</sub>: In horizontal SP alliances, a) partner involvement in the ex-post PMP has a positive effect on goal congruence where b) this effect is smaller than the positive effect of partner involvement in ex-ante PMP on goal congruence.*

### **2.3.2. Goal congruency through information sharing in the PMP**

Akkermans et al. (1999) stated that partners in alliance settings hold different beliefs and information about themselves and their relationships and act accordingly. One of the factors responsible for this is the lack of information exchange between partners.

Information sharing facilitates transparency about the partners' issues, possible concerns, intentions, and goals (Dekker 2004), and thus improves coordination and planning (Lee et al. 2000; Yuchtman and Seashore 1967). In contrast, insufficient or ineffective information sharing, according to Etgar (1979), can lead to "misunderstandings, incorrect strategies, and mutual feelings of frustration" (p. 65). Consequently, information sharing is considered an essential component of any cooperative venture (Busi and Bititci 2006; Holmberg 2000), because the mutual exchange of information fosters a convergence of intentions (Spekman et al. 1998) and "create[s] the conditions necessary for bringing goals into alignment" (Stephen and Coote 2007, p. 285). This is supported by Jap (1999), who outlined that goal congruence can be achieved if managers share strategic information in multiple interactions as the intentions and goals of partners will move towards each other.

With respect to PM in horizontal service alliances, exchanging performance information helps to establish transparency about the metrics used, targets set, measurement processes applied, and eventually the PM results (Forslund and Jonsson 2007). This increased transparency minimizes the potential risk that partners pursue unilateral acts that are driven by a competitive motive, because the exchanged PM data would help detect such actions. Instead, exchanging data provides information about the individual strategic orientation. This

knowledge can, if necessary, be used as a starting point to discuss changes of direction and align the common and individual goals of the alliance partners. Furthermore, transparency about PM ensures more than indicating the partners if they are working in opposing directions. Rather, sharing performance information contributes to a reciprocal relationship that fosters giving and receiving. This constant interaction and the transmitted performance data are valuable to solve problems and coordinate cooperative action (Anderson and Weitz 1989), which in turn results in the partners developing “greater respect and understanding for each other” that eventually leads to the partners aiming at and “reach[ing] a common purpose” (Stephen and Coote 2007, p. 228). Thus, transparency generated via information sharing in the PMP contributes to a convergence of goals, so that we hypothesize:

*H<sub>3</sub>: In horizontal SP alliances, information sharing in the PMP has a positive effect on goal congruency.*

### **2.3.3. The performance effect of goal congruency**

Whenever various actors are involved in joint activities, reaching unity of effort is not only challenging, but essential for performance (Jap and Anderson 2003). If, for example, the focus of one alliance partner is on operational efficiency and cost reduction, while the other ones rather focus on service effectiveness and quality improvements, inconsistencies in resource allocation to achieve these goals would be the consequence, leading inevitably to suboptimal performance as a result of lacking unity of effort (Lai et al. 2002). The foundation to unity of effort is coordination (Samaddar et al. 2006; Mellewigt et al. 2007), which can be established through congruent goals among the partners (Samaddar et al. 2006), because this ensures that the partners are working along similar lines. Especially in the setting of a horizontal alliance, congruent goals take on an important role for achieving performance because

this organizational set-up compared to vertical ones entails various aspects that make success more difficult to reach.

The lower interdependence in horizontal alliances (Rindfleisch 2000) implies that there is no strong partner that "makes the call", leading to role ambiguity among the partners. In this situation goals take on a coordinating function in the sense that they set specific targets and objectives, which the individual firm can then pursue (Dekker 2004). Hence, congruent goals provide clear strategic guidelines that clarify roles and responsibilities along which tasks are distributed and the partners can orientate themselves. This ensures a consistent direction that channels the efforts of the alliance partners (Van de Ven 1976), which, in turn, facilitates the attainment of these goals. If this is not given, actors must act in an impromptu manner, which hampers coordination and reduces overall performance. Therefore, a common direction in the sense of similar priorities and congruent goals will enhance unity of efforts and positively influence the alliance performance.

Furthermore, the aspect of co-opetition leaves the partners in a state of uncertainty, because alliance partners cannot be sure if their efforts and investments are contributing toward other partners' individual success rather than that of the alliance (Lavie 2006; Wilhelm 2011). In such a situation of constant uncertainty, congruent goals function as an anchor for alliance partners. This results in higher commitment and cooperation. Cooperation, which Zeng and Chen (2003) defined as "the willingness of a partner firm to maximize the joint interests of the alliance" (p. 588), is an essential facilitator for success (Cousins et al. 2008; Kanter 1994; Schmolzi and Wallenburg 2012; Zeng and Chen 2003). Hence, cooperation is fostered by reducing uncertainty via congruent goals, which in turn results in unity of effort. Thus, we hypothesize:

***H<sub>4</sub>**: In horizontal SP alliances, goal congruency has a positive effect on alliance performance*

Fig. 2-2 illustrates the hypothesized relationships described before.

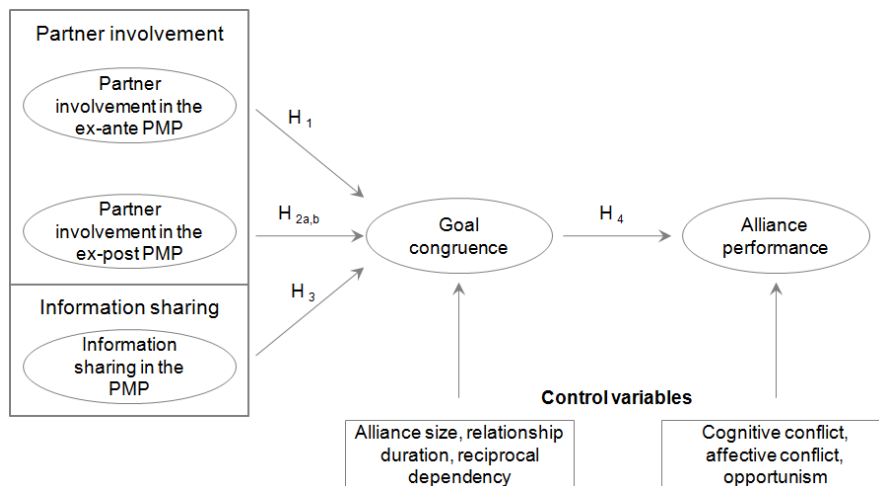


Fig. 2-2: Hypothesized structural model

## 2.4. Methodology

### 2.4.1. Sampling and data collection

To test the derived hypotheses, we collected primary data from service companies via a key informant approach (Phillips and Bagozzi 1986). We targeted senior managers of service companies that were potentially engaged in alliances with other SPs. These were explicitly selected as key informants as it can be assumed that they are, due to the reasonable size of logistics companies (50% of the surveyed logistics SPs have less than 100 employees – see Tab. 2-1), still largely involved in major operational tasks such as alliance management and thus the most knowledgeable point of contact (see Appendix 2.2 for demographics of responding managers). For comparability reasons, we focused on only one service industry, that is, logistics services. The logistics service industry seems appropriate as it accounts for a large share of GDP (5%) in Germany (Destatis 2012) and is one of the most important service industries worldwide.

The sample was drawn from two commercial databases that contain company data on German companies with an annual turnover of more than €1 million. We identified 3,100



logistics SPs with a valid email address that have legal entities in Germany. The corresponding managers received an email invitation with a personalized link to our web-based survey. They were explicitly asked to base their answers on their strategically most important horizontal alliance (this does not imply that only successful alliances were considered as indicated by the mean and standard deviation performance scores displayed in Appendix 2.1).

The questionnaire was developed based on existing scales and concepts. To ensure face validity, the survey with its corresponding constructs was validated through screening and testing with ten logistics researchers and seven CEOs of LSPs. The items were revised iteratively until no further changes were suggested.

<b>Annual turnover (in €)</b>	<b>N</b>	<b>%</b>
1–5 million	52	26
>5–25 million	59	30
>25–100 million	37	19
>100–500 million	22	11
>500 million–5 billion	9	5
>5 billion	2	1
Not specified	16	8
<b>Total</b>	<b>197</b>	<b>100</b>

<b>Number of employees</b>	<b>N</b>	<b>%</b>
1–50	66	34
51–100	32	16
101–500	44	22
501–1000	20	10
>1000	22	11
Not specified	13	7
<b>Total</b>	<b>197</b>	<b>100</b>

*Tab. 2-1: Demographics of responding companies*

In total, 362 responses were received, representing a response rate of 11.7%. This rate is adequate for comparable sample sizes (Wagner and Kemmerling 2010). Of these, 147 respondents stated that they currently do not, nor did in the recent past, participate in a horizontal alliance. These responses were excluded from the subsequent analysis. Of the remaining

215 responses, 18 were discarded due to incomplete data, leaving 197 valid responses for analysis (see Tab. 2-1 for demographics of responding companies).

To test for non-response bias, we followed established practices. First, we compared answers from companies that responded early to those that responded late (Armstrong and Overton 1977; Wagner and Kemmerling 2010). Second, we conducted a follow-up study with 18 randomly chosen non-respondents (Lambert and Harrington 1990). They received a short questionnaire with 12 randomly chosen items from the original questionnaire. We compared the response patterns from the follow-up participants to those who filled out the questionnaire in the first place. Neither of the mentioned methods, which were tested via t-tests ( $p < 0.05$ ), indicated significant differences in the data.

To address the issue of the single source approach, we used a theoretically unrelated marker variable to test for common method bias (Podsakoff et al. 2003). For this purpose, we used a measure for legalistic conflict strategy ("In dealing with the conflicts between us, we remind our partner of contractual penalties") as marker variable. We found the lowest correlation of this variable to the other items to be  $-0.005$  ( $p > 0.941$ ). Further, we performed an unrotated factor analysis to conduct Harman's (1967) single factor test and found that the first factor accounts for 33% of the variance. Both results indicate that common method bias is of no concern (Harman 1967; Podsakoff et al. 2003). Furthermore, with respect to the study design, we assured the anonymity of respondents (Chang et al. 2010) and pointed out that there are no right or wrong answers.

#### **2.4.2. Measurement scales**

To operationalize the constructs included in the present study's conceptual model, we used established measurement scales for the majority of the constructs, which were borrowed from previous research and adapted to the present circumstances under study (Jap 1999;

Mohr and Spekman 1994; Mjoen and Tallman 1997). However, as there is no established construct for measuring *partner involvement* in the *ex-ante* and the *ex-post PMP*, we followed a process used before by Stock et al. (2000) and derived the scales from constructs and concepts that can be found in management literature (e.g., Chen and Paulraj 2004). Ten logistics researchers, who are knowledgeable in this domain, were consulted during the establishment process to ensure validity and reliability of the items. The measurement of the constructs of our conceptual model relied on multi-item 7-point Likert scales, anchored by 1 = *strongly disagree* to 7 = *strongly agree*. The scales are presented in the Appendix 2.1 and described in the following.

*Partner involvement in the ex-ante PMP* and *in the ex-post PMP* refer to the extent to which the respondents company operationally involves its alliance partners and integrates activities of the ex-ante, respectively the ex-post PMP phase with them. The scale's wording was tailored to the specific phase. *Goal congruence* was measured based on a scale introduced by Jap (1999). The construct identifies the extent to which the alliance partners are congruent regarding their goals. *Information sharing in the PMP* was captured based on the scale of Mohr and Spekman (1994). It refers to the extent to which alliance partners keep each other informed about critical and proprietary information concerning the PMP. *Alliance performance* was measured based on a scale from Mjoen and Tallman (1997), which captures the performance of the alliance based on the assessment of the focal firm.

### **2.4.3. Control variables**

Also other factors can be expected to influence the establishment of goal congruence (see Fig. 2-2). Therefore, we included different control variables: alliance size (de Celis and Lipinski 2007) and relationship duration (Schreiner et al. 2009). As a third control variable, we added reciprocal dependency to our model. To derive the values for reciprocal dependency,

we used two constructs established by Ganesan (1994): first the focal firms' dependency on the alliance was assessed by measuring to what extent the alliance was important to them and then, second, the alliances' dependency on the focal firm was assessed by asking for the extent to which the focal firm is important for the alliance. Reciprocal dependency in a subsequent step was calculated by subtracting the averages of the corresponding items from each other.

Furthermore, it can be expected that also other factors influence alliance performance. Thus, we included three further control variables: Cognitive and affective conflict (Amason 1996) and opportunism (Delerue and Vidot 2006) (see Appendix 2.1).

#### **2.4.4. Measurement model**

We first conducted an exploratory factor analysis using SPSS 20 to test the measurement model. Five factors were extracted, which is equivalent with our five focal constructs (see Appendix 2.3). In a second step, we carried out a confirmatory factor analysis with AMOS 20 to assess the reliability and validity of the measurement model. The results revealed an adequate fit ( $\chi^2 = 290.7$  with  $df = 136$ ;  $\chi^2/df = 2.14$ ; CFI = 0.95; TLI = 0.94; RMSEA = 0.076; SRMR = 0.051) (e.g., Baumgartner and Homburg 1996; Browne and Cudeck 1992). All factor loadings are significant at  $p < 0.001$ , supporting convergent validity. Furthermore, the recommended minimum value for item reliability is considered 0.4 (Bagozzi and Baumgartner 1994), which is well exceeded for all items. In addition, the lowest Cronbach's alpha for the latent constructs is 0.82, and thus, substantially exceeds the threshold level of 0.7 (Nunnally 1978) (see Appendix 2.1). We examined composite reliability according to Bagozzi and Yi (1988). The recommended minimum value for composite reliability is considered 0.6 (Bagozzi and Yi 1988), which is also well exceeded by all constructs (see Appendix 2.3). Furthermore, discriminant validity was tested using the procedure

outlined by Fornell and Larcker (1981). In all instances, the average variance extracted is higher than the squared correlation between the constructs used (see Appendix 2.4).

### 2.4.5. Results

The hypothesized structural equations model (including the controls) was tested using AMOS 20. The fit indices of the model suggest that the hypothesized model fits the data well ( $\chi^2 = 816.5$  with  $df = 435$ ;  $\chi^2/df = 1.88$ ; CFI = 0.92; TLI = 0.91; RMSEA = 0.067; SRMR = 0.131) (e.g., Baumgartner and Homburg 1996; Browne and Cudeck 1992). Fig. 2-3 presents the results of the four hypothesized relationships. As displayed, partner involvement in the ex-ante PMP has a significant positive effect on goal congruence (+0.332,  $p < 0.05$ ), supporting hypothesis H<sub>1</sub>.

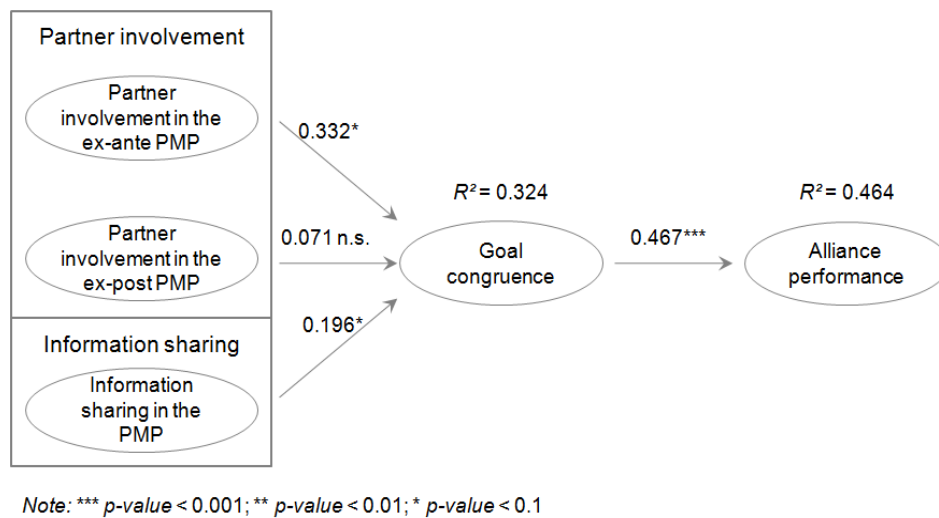


Fig. 2-3: Empirical results for hypothesized model

As expressed by the hypotheses H<sub>2a</sub>, we posit that partner involvement in the ex-post PMP has a positive effect on goal congruence. Contrary to assumptions, partner involvement in the ex-post PMP is not significant, leading us to reject the hypotheses H<sub>2a</sub>. In hypothesis H<sub>2b</sub>, we posit that ex-ante involvement in the PMP has a stronger effect on goal congruence than ex-post involvement in the PMP, which is supported by our results.

Hypothesis H<sub>3</sub>, which links information sharing in the PMP to goal congruence, finds support: the effect of information sharing is both significant and positive (0.196,  $p < 0.05$ ). Together with partner involvement, information sharing as the second domain in mutual PM explains a very substantial part ( $R^2 = 32.4\%$ ) of the variance in goal congruence (see Appendix 2.5)

Hypothesis H<sub>4</sub> postulates a positive effect from goal congruence to alliance performance. The results support this with a very substantial positive path coefficient (0.467,  $p < 0.001$ ). As a result of this strong interrelationship, the  $R^2$  value of alliance performance is 46.4%, which indicates that a substantial part of alliance performance results from congruency of goals.

To exclude direct performance effects of partner involvement in the ex-ante and ex-post PMP and information sharing, a rival model was calculated that also included direct effects from mutuality in PMP to alliance performance. None of these three direct effects were found to be significant at  $p < 0.1$ .

## **2.5. Implications**

### **2.5.1. Theoretical implications**

This study contributes to and extends research into managing horizontal service alliances along four dimensions. First, prior research had already provided evidence that the PMP can contribute to aligning goals in a cooperative venture. Until now, however, this effect had only been studied based on conceptual and case-based research in vertical supply chain settings (Bititci et al. 1997; Lehtinen and Ahola 2010; Neely et al. 1995). We extend this research by testing the relationships with a large empirical study and by viewing the specific setting of horizontal service alliances.

Second, the present research shows that in horizontal service alliances, which compared to vertical alliances, are characterized by a higher management complexity due to co-competition (Wilhelm 2011), a multilateral set-up (Schmoltzi and Wallenburg 2011), and low partner interdependency (Rindfleisch 2000), mutuality in the PMP plays a central role. Although generally the mutuality components of partner involvement and information sharing have received ample attention (Brewer and Speh 2000; Cao and Zhang 2011; Fawcett and Magnan 2002; Samaddar et al. 2006; Zhou and Benton 2007), most studies have only considered these two aspects in a general context without taking a specific look on distinct operational processes such as the PMP. Our research, on the contrary, goes beyond this by establishing a concept that links both, PM and mutuality, via the concept of partner involvement and information sharing in the PMP. Our results show that both components—partner involvement and information sharing—are important, and further, that the two, combined to create the concept of mutuality in the PMP, are vital in aligning goals and establishing goal congruency (as shown via their high explanatory power;  $R^2 = 32.4\%$ ) (see Appendix 2.5).

Third, with the present research, we provide a more thorough understanding with respect to the effects that different phases of the PMP have on establishing goal congruence. We do this by differentiating two phases of the PMP (“ex-ante” and “ex-post”) to deliver more refined insights with respect to the effects of the timing of partner involvement in this important operational process. This, to the best of our knowledge, has not been researched to date.

A significant finding of the present research is that the effect of partner involvement in the PMP depends to a great extent on the phase of the PMP into which the partners are integrated. Only partner involvement in the ex-ante PMP has a significant positive effect on goal congruence (supporting H<sub>1</sub>). The higher the degree of partner involvement during the stage

in which metrics are defined and targets are set, the more aligned the goals of the alliance partners become. This is consistent with Neely et al. (1995) and Lehtinen and Ahola (2010), who stated that common measures should be used to align the partners' goals, which might possibly conflict. Here, early partner involvement is essential as it paves the way for future mutual operations (Ittner and Larcker 2001; Otley 1999). In the first two process steps, the foundation for PM is laid by deciding on a common ground concerning what measures to use and against which target values to track, which in turn fosters congruent goals. In contrast, involving partners during the measurement and analysis phase (i.e., partner involvement in the ex-post PMP) does not yield any significant effect. Obviously, partner involvement later in the process does not yield substantial alignment as the alliance activities are already nearly fully formed. At this point, involvement into measuring performance and analysing results generates less discussion about common goals and therefore less often triggers a rapprochement process of goals. In this sense, our study clearly demonstrates that the timing of partner involvement in the PMP makes a big difference.

Fourth, we view the link between goal congruence and performance in the special setting of horizontal service alliances. Whereas previous research has looked mainly at performance results for the individual firm itself (e.g., Cao and Zhang 2011; Stephen and Coote 2007), we show that congruent goals have a considerable influence on the performance of the horizontal alliances in total (supporting H<sub>4</sub>). Indeed, our findings confirm the results of earlier research with respect to vertical alliances (e.g., Jap and Anderson 2003; Samaddar et al. 2006) that suggests a positive relationship between goal congruence and performance outcomes. The comparably high  $R^2$  of 46.4%, however, indicates that it was necessary to expand this research to the context of horizontal service alliances as we can see that the performance effect of congruent goals is even more pronounced here compared to vertical alliance settings. This is hardly surprising considering the co-opetitive setting, which creates a latent



feeling of uncertainty due to possible divergent views that might impede the will to get completely involved. With the assurance of congruent goals, however, partners are more willing to bring in their resources to make the cooperative venture a success as they ideally pull in the same direction (Jap 1999). This is especially relevant as the multilateral set-up and lower partner interdependence create situations in which “giving direction” is necessary to capture the benefits from the alliance.

### **2.5.2. Managerial implications**

The results the present study yields are relevant for all managers of logistics SP, but also for managers from other service industries that are currently engaged or plan to engage in a horizontal alliance. Although horizontal alliances are one of the approaches to deal with the increasing pressure in different service sectors (Cruijssen et al. 2010; Krajewska et al. 2008), research on horizontal alliances in contrast to vertical alliances in ordinary supply chain relationships is still in an early phase.

The premise that mutuality and collaboration is a central aspect in such alliances holds various implications with respect to how they are managed. From the perspective of a SP manager that is engaged in a horizontal alliance, the findings are important in that they illuminate relevant questions such as whether or at what point should other alliance partners be included in the PMP? To what extent should performance information be exchanged? While other studies do not distinguish the importance of partner involvement concerning individual process steps, the present research actually provides a more in-depth consideration. Here, early involvement of partners is identified to be the key to success. Collaboration and interaction during the first two steps of the PMP, namely defining metrics and setting targets, is of paramount importance. The results of involving partners late in the PMP suggest that this helps very little, if at all, because by then, the horse has most likely bolted. Therefore, man-

agers should ensure that partner involvement takes place early during the ex-ante phase of the PMP, because if involvement does not occur here, later involvement will not be able to compensate for the missed opportunity. This is the case because defining key performance metrics and targets builds a common ground from which the further actions of the alliance can be controlled.

Another aspect that becomes clear via this research is the strong effect that common goals have on alliance performance. Congruent goals create unity of effort, blending individual partner strengths to attain set objectives. This relationship may seem intuitive at first, but the high numbers of unsuccessful alliances prove that, in many cases, no particular attention seems to be paid to this fact (Park and Ungson 2001). Alliance managers, therefore, should question to what extent the goals of their company are aligned with the goals of the involved partners.

Returning to the special circumstance of co-opetition, which is typical for horizontal alliances (Wilhelm 2011), involving partners into PM might be a chance to reduce the negative aspects associated with it. Competition among cooperating logistics SPs, but also high competitive pressure in the services industry, leads individual companies to pursue their own agenda, often at the expense of their partners, which hampers the cooperative relationship (Cao and Zhang 2011). When partners are involved in key processes such as the PMP that helps align their goals with their partners in an alliance, a common direction can be ensured. This improves role clarity and is likely to reduce the competitive aspect, leading to a more successful business venture.

## **2.6. Limitations and further research**

The present research extends the current literature on alliance management through various theoretical and managerial implications. And, while it does not come without limitations, it provides a sound basis for future research by opening up diverse research avenues.

First, both from a conceptual and empirical perspective, this research is limited to horizontal service alliances. Although similar effects could be expected for horizontal alliances in manufacturing, retailing, or mixed-industry settings, certain aspects such as co-opetition or low interdependency will likely be less pronounced. To show this, future research will need to collect data in these different industry settings.

Second, our data collection in the service sector was focussed on the logistics industry only. Certainly, this service industry is one of the most important as indicated by high outsourcing rates (Langley and Capgemini 2012) and its important role in both, the local and global economy (Destatis 2012). Although we have no indication that managing horizontal logistics alliances differs from other horizontal service alliances, future research should validate our findings by collecting and analysing data from other service alliances.

Third, mutuality in the PMP is an aspect that develops over time. To complement our static study, future research is encouraged to explore how to best realize the potentials identified. At the core of this will be the question of how to best carry out the process of involving the different partners, which necessitates a longitudinal study design and more qualitative elements.

Fourth, this research has proven that partner involvement and information sharing in the PMP in a horizontal alliance setting has a strong influence on aligning goals. Therefore, we encourage future research on the role of partner involvement and information sharing in other

operational processes in order to explore more alliance management fields where such an approach is beneficial.

Last, our results underscore the paramount importance of goal congruence in establishing high-performing horizontal alliances. Thus, the aspect of aligning goals should be brought into sharper focus in future research projects. For example, aligning goals could be used as an intermediate outcome variable in alliance management research that views completely different aspects and domains.

### **3 The interplay of relational governance and formal control in horizontal alliances: A social contract perspective<sup>2</sup>**

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<sup>2</sup> This chapter is based upon the eponymous paper co-authored with Carl Marcus Wallenburg and accepted for publication in the Journal of Supply Chain Management (2014), Vol. 50, Issue 2.

### **3.1. Introduction**

Over the last two decades a trend towards cooperative ventures such as horizontal alliances could be observed, especially in the logistics sector (Cruijssen et al. 2007; Das and Rahman 2010; Schmoltzi and Wallenburg 2011). The motivations for entering into alliances are diverse and range from increasing market penetration and acquiring additional competencies to improving service quality and productivity (Cruijssen et al. 2007; Hofenk et al. 2011; Schmoltzi and Wallenburg 2011). Despite their long history, today many alliances fail in meeting its expectations and are terminated (Langfield-Smith 2008); corresponding shares are estimated to be as high as 40% to 70% in some industries (Kale et al. 2002; Spekman et al. 2000; Taylor 2005). In this context, opportunistic actions of alliance partners are often emphasized as the main reason for failure (Das 2004; Das and Rahman 2010).

Effective alliance management through the establishment of appropriate governance mechanisms has been identified to reduce opportunistic behavior among alliance partners, which increases the likelihood of alliance success (Gulati and Singh 1998; Hoetker and Mellewigt 2009; Lee and Cavusgil 2006; Schmoltzi and Wallenburg 2012). Such governance mechanisms are "safeguards that firms put in place to govern inter-organizational exchange" to "minimize exposure to opportunism" (Jap and Ganesan 2000, p. 230).

Compared to vertical alliances, horizontal alliances are especially prone to opportunistic behavior due to their idiosyncrasies such as co-opetition – the simultaneous existence of cooperation and competition among the partners (Das and Teng 2000; Wilhelm 2011; Zeng and Chen 2003) –, multilateralism – alliances often entail three or more firms (Schmoltzi and Wallenburg 2011) –, and less interdependence compared to vertical settings (Rindfleisch 2000). Furthermore, horizontal service alliances such as those of logistics service providers (LSPs) gain a competitive advantage based on their know-how (Paulin et al 1997; Ritala et al.

2009). As only limited methods exist to protect against knowledge spill-over, the risk of opportunistic behavior is further aggravated (Hamel 1991; Khanna et al. 1998; Steinicke et al. 2012).

In this setting of horizontal alliances, relational governance is an especially important form of governance (Schmoltzi and Wallenburg 2012). In relationally-governed exchanges, the enforcement of obligations, promises, and expectations occurs through social processes that promote relational norms and rely on mutual adjustment and joint action (Heide and John 1992; Poppo and Zenger 2002). Here, joint action in key areas of the alliance (Joshi and Stump 1999) is of vital importance. One such key area is performance measurement (PM) (Bititci et al. 1997). Hence, joint action in the corresponding performance measurement processes (PMP) will establish social processes and relational norms that function as safeguards against opportunism (Ju et al. 2011; MacNeil 1980).

Transaction Cost Economics (TCE) points out that relational governance is not the only way to mitigate the exchange hazards and to reduce the risk of opportunistic behavior; formal control mechanisms are aiming at the same objective (Anderson and Weitz 1992; Heide et al. 2007; Poppo and Zenger 2002; Williamson 1985). This raises the question whether it is effective to complement joint action in the PMP with formal governance mechanisms in order to reduce opportunism within horizontal (LSP) alliances. At first sight such an approach may appear very promising, because process control and output control as key elements of formal control (Jaworski et al. 1993) could build on joint PM in their monitoring and evaluation of processes and outputs. However, prior research does not show consensus in this respect.

While one stream of relationship and governance research clearly outlines the benefits of combining relational governance with formal control (Aalbers 2012; Cannon et al. 2000; Poppo and Zenger 2002), a second stream notes their substitutive or even antagonistic nature

in that formal control may undermine social processes, hamper the formation of trust or even breed a situation of mistrust that instead increases opportunism (Dyer and Singh 1998; Gulati 1995; Wang et al. 2011).

The importance of the fundamental question whether it is effective or instead counter-productive to complement relational governance by formal control has been highlighted in a call for research by Rindfleisch et al. (2010) who postulate that further investigations with respect to governance in alliances should be undertaken and that this research should particularly focus on the application of more than one form of governance. This call was later reinforced by Gelderman and Vermeulen (2012).

We address this research gap and outline that the interplay of governance is determined by the question whether formal control is legitimized by the social contracts inherent to the alliance or not. We build on social contract theory (Dunfee et al. 1999) and expand on Heide et al. (2007) in outlining that legitimization for or against formal control will be embedded in the relational setup and the specific forms of joint action.

This focal aspect of our research – the interaction between relational governance and formal control – is complement with two further contributions: building on TCE we outline both, the specific effects joint action in the PMP has in reducing opportunism in horizontal alliances and further the positive effect that reducing opportunism has on alliance performance. To test the corresponding hypotheses we apply an empirical methodology using data from 197 LSPs engaged in horizontal alliances. With that, our goal is to enhance the theoretical understanding regarding the functioning of different governance forms and the effectiveness of their interplay for reducing opportunism and increasing alliance performance.



## **3.2. Conceptual framework**

### **3.2.1. The role of relational governance in horizontal alliances**

Firms in a horizontal alliance aim at achieving a collaborative advantage as a result of joint value creation (Dyer and Singh 1998). As outlined in the introduction, in horizontal alliances relational governance is especially effective in mitigating exchange hazards and reducing opportunism. Relational governance is based on the use of shared relational norms to monitor and coordinate the behaviors of the exchange partners (MacNeil 1980). At its very heart are joint actions in focal areas of the alliance (Heide and John 1990) that draw the firms closer to each other and provide a direct check on opportunism (Heide and John 1990; Zaheer and Venkatraman 1995).

Joint action allow the alliance partners to share their needs, concerns, and expectations (Nyaga et al. 2010), so that they effectively become "business partners" in the alliance (Heide and John 1990; Kim 1999). As a result of the increased involvement and repeated interaction, relational norms and mutual trust among the alliance partners develop (Bertelli and Smith 2010). Within the TCE framework, these mechanisms of relational governance reduce transaction costs by minimizing appropriation concerns. These concerns "arise from the uncertainties associated with future specifications, cost uncertainties, and problems in observing partners' contributions, all of which aggravate the potential for moral hazards" (Gulati and Singh 1998, p. 788).

Heide and John (1990) stressed the fact that joint action should take place in focal processes of the alliances. PM has been recognized by research to be such a focal process due to its importance in both, companies as well as alliances (Bititci et al. 1997). Joint action in PM takes place during the process steps of PM, namely metrics definition and target setting (which we refer to as "*ex-ante*" as it lies before actual operations and measurement) as well as during the actual operational measurement and the evaluation of performance (which we refer

to as "*ex-post*" as it comes after the pre-operational phase) (Forslund and Jonsson 2007; Green and Welsh 1988).

*Joint action* in the *ex-ante PMP* as well as in the *ex-post PMP* help the alliance partners to understand what happens in the alliance and why it happens (Holmberg 2000) as they design the PMPs together. The repeated interaction between the partners leads to close relational bonds, which result in the creation of relational norms as mutual involvement leads to interest in outcomes (Saxton 1997). This, in turn, mitigates opportunism by encouraging cooperative behavior (Srinivasan and Brush 2006). The importance of jointly deciding on what to measure (included in the *ex-ante PMP*) and how to measure (included in the *ex-post PMP*) is stressed by several authors (e.g., Papkiriakopoulos and Pramataris 2010; Simatupang and Sridharan 2002) as it creates consistency across a horizontal alliance. The collaborative approach during the strategic *ex-ante* and the operational *ex-post* phase of the PMP creates a sense of "camaraderie" that keeps the individual company from self-interest seeking as they treasure the relationship with their alliance peers more than "the value of its gain from misbehaviour" (Das and Rahman 2001, p. 60). Thus, we hypothesize:

*H<sub>1a,b</sub>*: *Joint action in a) the ex-ante PMP and b) the ex-post PMP reduce opportunism in horizontal alliances.*

### **3.2.2. Interplay of relational and formal governance**

Transaction Cost Economics (TCE) is an established theory to analyze and explain how transactions between partners in an alliance are organized (Nyaga et al. 2010; Williamson 1975, 1985). Besides relational governance, TCE also embraces formal control as a means to limit opportunistic behavior of alliance partners (Anderson and Weitz 1992; Dekker 2004; Heide et al. 2007). Before viewing the interplay of relational governance and formal control,

we shortly outline formal control and two of its most relevant approaches, namely process and output control (Jaworski et al. 1993), which we focus on in this research.

### Formal control

Formal control consists of contractual obligations and formal organizational mechanisms for cooperation (Dekker 2004; Ouchi 1979) that detail the roles and responsibilities as well as the processes and outputs, which are closely monitored (Li et al. 2010). It can be classified into mechanisms addressing the processes and behavior of the actors (i.e., process control) and those addressing the output resulting from a process (i.e., output control) (Jaworski et al. 1993).

*Process control* is used to "monitor partner behavior and direct that behavior toward specific goals and objectives" (Nakos and Brouthers 2008, p. 126). The emphasis is on the evaluation of behavior and the corresponding processes, not the output (Aulakh et al. 1996; Heide et al. 2007). Attention during operational processes has two effects that reduce opportunism: First, by applying process control, the supervising firms put close attention on critical processes of their peers and provide supportive action, creating a benevolent atmosphere that reduces the danger of partner misbehavior (Bello and Gilliland 1997; Das and Rahman 2001). Second, it signals that the alliance is of great importance, inducing the feeling of interest into the development of a long-term relationship (Celly and Frazier 1996; Nakos and Brouthers 2008). Yet, process control does not only have positive sides. Various scholars view process control in a very different light by stressing its invasive nature, which conveys a feeling of mistrust (Goshal and Moran 1996) and leads to opportunism as a consequence of reactance (Heide et al. 2007).

In contrast, *output control* only focuses on what the final results are, not on how they are reached. Ju et al. (2011) describe it as a "hands-off approach" in which alliance partners

merely set clear goals, but the single peer firm is given the autonomy to reach these goals at their own discretion. This laissez-faire style of management is argued to usually be a more effective approach to reducing opportunism because the freedom provided in pursuing operations to reach goals leads to less reactance (Heide et al. 2007; Ju et al. 2011). Further, while output control still contains obtrusive elements, not being under constant surveillance shows more trust into the competencies and intentions of the alliance partners. This reduces the intentions to behave opportunistically (Kale et al. 2000).

#### Differing schools of thought on the interplay of governance

As described, following TCE logic both, relational governance in form of joint action in the PMP as well as formal control in form of process and output control are capable of reducing opportunism in an alliance (Dekker 2004; Ju et al. 2011; Williamson 1985). While current research has called for extending the use of governance approaches that embrace relational governance and formal control simultaneously (Sundaramurthy and Lewis 2003), results regarding their interplay are very mixed (Kale and Singh 2009). Specifically, one school of thought suggests a substitutive relationship (Gulati 1995; Dyer and Singh 1998; Wang et al. 2011), while a second one posits their complementary nature (Aalbers 2012; Cannon et al. 2000; Poppo and Zenger 2002).

*A substitutive nature of interplay* implies a negative interaction between relational governance and formal control either via cannibalization or via destruction. Cannibalization means that the use of one governance form makes the other less useful or even superfluous as both address the same exchange hazards. As the simultaneous application of several governance mechanisms is costly, the "use of multiple mechanisms may be unnecessary" (Schepker and Oh 2012 in press, p. 2). In our context, corresponding research argues that joint action foster the development of relational norms and trust, which are substitutes for formal control

as contracts are replaced by "handshakes" (Adler 2001, p. 219) and the need for monitoring (Gulati 1995) and formal contractual specifications (Larson 1992) is reduced.

Destruction refers to the fact that the establishment and usage of one governance form may even hamper or impede the usage of the other (Poppo and Zenger 2002). With respect to our context, Ghoshal and Moran (1996) argue that formal control signals that the partners are "neither trusted nor trustworthy to behave appropriately without such controls" (p. 24). The underlying mechanism would be that formal control undermines social processes, destroys relational norms, hampers the formation of trust, or even breeds a situation of mistrust. Consistent with this, Macaulay (1963) states that "[d]etailed negotiated contracts can get in the way of creating good exchange relationships" (p. 64).

*A complementary nature of interplay* implies a positive interaction of relational governance and formal control. The argument for this is equally compelling as for the substitutive nature (Poppo and Zenger 2002). Within formal control, process and output control provide the basis for opportunism not going unnoticed. This limits possible short-term gains from un-cooperative behavior and promotes expectations that the other alliance partners will behave cooperatively, thus complementing the limits of relational governance (Poppo and Zenger 2002). In the other direction, relational governance covers the "blank spots" of formal control when unexpected situations and challenges arise that could not be specified ex-ante in the design of process and output control. Here sole usage of formal control may be insufficient to resolve these contingencies (Poppo and Zenger 2002), making joint action on the basis of relational norms necessary to work out problems "on the fly" (Nyaga et al. 2010).

With respect to the context of this research, the question remains whether formal control effectively complements relational governance to reduce opportunism in horizontal (LSP) alliances. At first glance this seems very promising as process and output control would fol-

low-up the design and operation of the PMP in the sense that they guarantee that the aspects deemed important to the alliance are formally monitored and evaluated and, therefore, do not go unnoticed. Such complementary set-up would deter opportunistic behavior. However, due to the idiosyncrasies of horizontal alliances (i.e., co-opetition, multilateralism, and reduced interdependence), the relational norms and trust that were established through joint action are of vital importance (Schmoltzi and Wallenburg 2012). Further, following the argumentation of the substitutive nature school, companies in a horizontal alliance seem especially prone to perceive the installment of formal controls as intrusive and distrustful (Goshal and Moran 1996; Macaulay 1963).

#### Interplay of joint action in the PMP and formal control

Regarding the interplay of joint action in the PMP and process and output control we build on social contract theory (Dunfee et al. 1999) and show that their interplay is only effective when formal control is legitimized by the social contracts inherent to the alliance. Because of the multilateral character of horizontal (LSP) alliances (Schmoltzi and Wallenburg 2011), formal control is here even more invasive than in other relationships. Therefore, a high level of legitimacy is required for formal control to not show its potential "dark side" in undermining social processes and relational norms and breeding a situation of mistrust which increases opportunism.

In general, the legitimization of activities within a relationship is provided via social contracts (Dunfee et al. 1999; Heide et al. 2007). They are defined as "norms, assumptions, and beliefs that [alliance partners] conceive as fair and appropriate [i.e., legitimate] for parties involved in [alliance] relationships" (Edwards and Karau 2007, p. 67). With respect to process and output control, the underlying social contracts are the result of partner interaction (Dunfee et al. 1999), in our case within the PMP. Through joint action in this domain, a mutual understanding is created about which PM related activities are legitimate and which are

not. In that sense, the social contracts established through relational governance (i.e., joint action) provide (or do not provide) the basis for formal control activities (Ouchi 1979).

*Autonomy as social contract from joint action in the ex-ante PMP.* When acting jointly in the ex-ante phase of the PMP, alliance partners create a mutual understanding of alliance objectives and establish mutual agreements on how to operationalize them via performance metrics. Further, targets for the metrics are jointly set to clarify the ambitions of the alliance. Putting emphasis on joint action in this ex-ante phase of the PMP at the same time, however, leaves the discretion on how to best reach the goals and on deciding what action to take is most appropriate with the individual alliance partner. In this sense, the individual alliance partners are empowered and legitimized to act autonomously in reaching these goals without being subject to further scrutiny and unilateral control by other alliance partners.

This means that no social contract is present that allows applying process control, the extremely invasive (Goshal and Moran 1996) form of formal control. In an autonomy-oriented set-up, it is simply not legitimate to monitor how other partners within the alliance carry out their processes, to evaluate them, and even propose modifications of the processes if targeted goals are not reached. Even for output control, which is less invasive (Heide et al. 2007), legitimization is not provided as the autonomy-oriented social contracts also do not entitle other alliance partners to monitor the actual fulfillment of goals and to give feedback in cases where goals are not met.

As both forms of formal control include partner behavior that is not backed by social contract, or put in different words, that has no legitimization, process and output control will show their negative sides and lead to reactance and increased rather than reduced opportunism. This means that joint action in the ex-ante PMP and formal control are antagonistic and will show negative interaction effects:

*H<sub>2a,b</sub>: Complementing joint action in the ex-ante PMP with a) process control and b) output control increases opportunism in horizontal alliances as their application is not legitimized through social contracts.*

**Engagement as social contract from joint action in the ex-post PMP.** Acting jointly in the ex-post phase of the PMP implies that the alliance partners jointly measure the results of their alliance activities and that they jointly engage in analyzing and interpreting the outcome.

Through joint action in the ex-post PMP, an (implicit or explicit) agreement concerning the procedures and standards for performance analysis and subsequent evaluation is created. This agreement is engaging in nature as the modus operandi leaves little room for autonomy of the partners since they act jointly in the measurement and analysis of the performance. In terms of relationship set-up, this translates to social contracts that allow and legitimize engaging activities of other alliance partners in the field of performance measurement and management.

For formal control this means that in a set-up, in which a precise framework for measurement and analysis has already been defined, the installment of additional unilateral governance in form of formalized process control does not violate the social contracts that previously have been established (through joint action in the ex-post PMP). Reactance by the controlled partner is thus unlikely to occur as the elements of process control are "conforming to existing beliefs, as established in the social contract" (Heide et al. 2007, p. 427). Instead formal control will, on the basis of mutual legitimization, be able to unfold its positive sides and in that sense complement relational governance.

A similar interplay can be expected for output control, which by its nature, is less invasive than process control (Heide et al. 2007), but still requires legitimization in order to be accepted in the alliance and not induce reactance by the controlled partner. In involving alli-



ance partners and carrying out performance measurement and analysis together, alliance partners agree to other partners engaging in the field of PM. Consequently, additional monitoring and controlling of outputs "is perceived as fair to the extent that it is executed against the backdrop of an established agreement" (Heide et al. 2007, p. 427). Hence, reactance will not arise and, instead, output control will be able to unfold its positive sides.

In conclusion, joint action in the ex-post PMP create social contracts with a clear focus on engaging and interactive PM. Thus, these joint action legitimize both process and output control, which, therefore, will unfold their positive sides and reduce opportunism. Hence we hypothesize:

*H<sub>3a,b</sub>: Complementing joint action in the ex-post PMP with a) process control and b) output control decreases opportunism in horizontal alliances as their application is legitimized through social contracts.*

### **3.2.3. Performance implication of opportunism**

Research in unison supports the view that opportunism has considerable negative consequences for the performance of any relationship (e.g., Wathne and Heide 2000; Williamson 1985) and specifically for alliances (e.g., Das 2004; Luo 2007). Opportunism has negative effects on relational norms and mutual trust, increases the perception of risk in the alliance and consequently requires the investment of substantial resources for control and monitoring to offset this risk, which induces substantial transaction costs (Das 2004; Das and Rahman 2010; Das and Teng 2001; Luo 2007; Parkhe 1993; Williamson 1985). This can be expected to be the same for horizontal alliances. In order to test this expectation empirically, we formulate the corresponding hypotheses:

*H<sub>4</sub>: Opportunism has a negative effect on alliance performance in horizontal alliances.*

### **3.3. Methodology**

#### **3.3.1. Sampling and data collection**

The data for this study was collected by means of a survey of LSPs. The particular domain of LSPs was chosen as this industry is one of the largest industries in most countries, for example representing 5% of GDP in Germany (Destatis 2012). It further is an industry exhibiting a relatively high number of alliances (Schmoltzi and Wallenburg 2011). Taking into account the strategic focus of our study, senior managers of these LSPs (CEOs and general managers) were targeted as key informants (Phillips and Bagozzi 1986) as they usually are the most knowledgeable people in their respective companies with respect to horizontal alliances – considering that many LSPs are rather small in size (50% of the sampled LSPs have 100 or less employees – see Tab. 3-1 and Appendix 3.2). For primary data collection, a web-based questionnaire was developed, which was sent out in summer 2011. To receive consistent data and control for the importance of the alliance, the key informants were explicitly asked to base their answers on the alliance which is strategically most important to their company (this does not imply that we only view successful alliances as indicated by the performance scores displayed in Appendix 3.1). The sample was drawn from two commercial databases containing corporate information on LSPs with legal entities in Germany and an annual turnover of more than €1 million. We identified 3,100 LSPs with a valid email address of which the corresponding managers received an email-invitation with a personalized link to the web-based survey. The survey was developed based on existing scales and concepts that were adapted to the specific context of our study. Face validity of the survey and its corresponding constructs was assured by applying a two-step validation process: After a first pre-test with ten logistics researchers, interviews were conducted with seven CEOs of LSPs. During these two steps, the items were revised iteratively until no further changes were suggested.

<b>Annual turnover (in €)</b>	<b>N</b>	<b>%</b>
1–5 million	52	26
>5–25 million	59	30
>25–100 million	37	19
>100–500 million	22	11
>500 million–5 billion	9	5
>5 billion	2	1
Not specified	16	8
<b>Total</b>	<b>197</b>	<b>100</b>

<b>Number of employees</b>	<b>N</b>	<b>%</b>
1–50	66	34
51–100	32	16
101–500	44	22
501–1000	20	10
>1000	22	11
Not specified	13	7
<b>Total</b>	<b>197</b>	<b>100</b>

<b>Number of alliance members</b>	<b>N</b>	<b>%</b>
2	36	18
3–10	60	30
11–20	23	12
21–50	20	10
51–100	30	15
> 100	23	12
Not specified	5	3
<b>Total</b>	<b>197</b>	<b>100</b>

*Tab. 3-1: Demographics of responding companies*

In total, we received 362 responses, representing a response rate of 11.7% that is common for comparable sample sizes (Wagner and Kemmerling 2010). Out of these, 147 respondents stated that they were neither currently nor in the recent past members of a horizontal LSP alliance. These LSPs could not be used for data collection, and thus, were excluded from further analysis. Of the remaining 215 responses, 18 were discarded due to incomplete data, leaving 197 valid responses for our analysis. Descriptive data for the respondents is provided in Tab. 3-1 and in the Appendix 3.2.

To test for non-response bias, we followed practices established by Armstrong and Overton (1977) and Wagner and Kemmerling (2010). In a first step, a comparison of answers from companies responding early to those responding late was performed. Second, a follow-

up study with 18 randomly chosen non-respondents was conducted using a short survey that was comprised of 12 randomly chosen items of the original survey (Lambert and Harrington 1990). Then responses of the follow-up participants were compared to those filling out the survey initially. Neither of the aforementioned comparisons via t-test showed any significant differences ( $p < 0.05$ ) in the data, which indicates that non-response is not a problem to the data.

As we applied a single source approach we assured the anonymity of respondents (Chang et al. 2010) and pointed out that there are no right or wrong answers. Further, we controlled for common method bias following suggested procedures by Podsakoff et al. (2003). First, we conducted Harman's (1967) single factor test by performing an unrotated factor analysis showing that the first factor accounts for 37% of the variance. A common method bias, however, would result in one factor accounting for more than 50% of covariance in the variables. Second, we used a theoretically unrelated marker variable (Podsakoff et al. 2003). As variable, which is theoretically unrelated to at least one variable of our conceptual model, we used a measure for conflict accommodating strategy ("In dealing with the conflicts between us, we often go along with the suggestions of our partner"). We found the lowest correlation of this variable to the other items to be 0.001 ( $p > 0.994$ ). These results indicate that common method bias is of no concern. Additionally, it has to be noted that any common method present cannot inflate interaction effects, but only reduce them (i.e., the statistical analyses empirically show smaller interaction effects than those actually present in reality) (Siemsen et al. 2010).

### **3.3.2. Measurement scales**

For the majority of the constructs in our hypothesized model we employed well established scales that were adapted to the specific context of our study (Delerue and Vidot 2006;

Jaworski et al. 1993; Mjoen and Tallman 1997). However, the two measurement scales for *joint action in the ex-ante* and *joint action in the ex-post PMP* were derived from constructs and concepts that can be found in management literature as no specific measures have been previously developed (e.g., Chen and Paulraj 2004). To ensure validity and reliability of these items, ten logistics researchers knowledgeable in this field were consulted in the establishment of these constructs, a procedure used before by Stock et al. (2000). All items were measured using 7-point Likert type scales and are presented in the Appendix 3.1 and described in the following.

*Joint action in the PMP* refers to the extent to which the respondents' company carries out mutual activities with other alliance partners by involving them into the PM activities. This scale was used for both, the *ex-ante* as well as for the *ex-post* phase of the PMP with only slight differences in the wording to tailor the scale to the corresponding PM phase.

For the measurement of formal control, we used established scales of Jaworski et al., (1993). *Process control* identifies the extent, to which the alliance partners control and evaluate the procedures and activities of the respondents' firm. *Output control* is measured by assessing the extent, to which the alliance partners control the respondents firms' outcomes. *Opportunism* is captured based on the scale of Delerue and Vidot (2006), which assesses the potential of opportunistic behaviour of alliance partners. *Alliance performance* is measured based on the scale of Mjoen and Tallman (1997).

### **3.3.3. Measurement model**

We completed the analysis following Anderson and Gerbing's (1988) two-step CFA-SEM methodology. The raw data were utilized as the input into Mplus Version 6.1 and the

robust MLR estimator<sup>3</sup> was utilized (Muthén and Muthén 2010). Global fit statistics are satisfactory (Hair et al. 2010), with a  $\chi^2 = 406.5$  with  $df = 194$ ,  $\chi^2/df = 2.10$ , CFI = 0.923, RMSEA = 0.075, 90% RMSEA CI (0.064; 0.085), and SRMR = 0.046. Tab. 3-2 reports the standardized factor loadings for each construct and Tab. 3-3 reports the correlations between the latent variables with the square root of the average variance extracted on the diagonal.

	ExAnte	ExPost	ProCon	OutCon	Oppor	Perform
ExAnte 1	0.848					
ExAnte 2	0.880					
ExAnte 3	0.874					
ExAnte 4	0.911					
ExPost 1		0.807				
ExPost 2		0.869				
ExPost 3		0.910				
ExPost 4		0.930				
ProCon 1			0.775			
ProCon 2			0.875			
ProCon 3			0.780			
OutCon 1				0.689		
OutCon 2				0.889		
OutCon 3				0.805		
OutCon 4				0.709		
Oppor 1					0.796	
Oppor 2					0.881	
Oppor 3					0.705	
Perform 1						0.875
Perform 2						0.821
Perform 3						0.923
Perform 4						0.853

ExAnte = Joint action in the ex-ante PMP; ExPost = Joint action in the ex-post PMP; OutCon = Output control; ProcCon = Process Control; Oppor = Opportunism; Perform = Alliance performance

*Tab. 3-2: Standardized factor loadings*

<sup>3</sup> The MLR estimator adjusts the Chi Square statistic, CFI, and RMSEA to address non-normality and calculates standard errors of model parameters that are robust to non-normality using a sandwich estimator (Muthén and Muthén 2010).

	ExAnte	ExPost	ProCon	OutCon	Oppor	Perform
ExAnte	0.879					
ExPost	0.803	0.880				
ProCon	0.286	0.343	0.811			
OutCon	0.531	0.541	0.696	0.777		
Oppor	-0.324	-0.206	-0.243	-0.225	0.797	
Perform	0.418	0.383	0.348	0.356	-0.525	0.869

ExAnte = Joint action in the ex-ante PMP; ExPost = Joint action in the ex-post PMP; OutCon = Output control; ProcCon = Process Control; Oppor = Opportunism; Perform = Alliance performance

*Tab. 3-3: Correlation matrix of the latent variables with the square root of the average variance extracted on the diagonal.*

Convergent validity is demonstrated in that all constructs exceed the recommended 0.70 value for composite reliability and have average extracted variances above the 0.50 recommendation (Fornell and Larcker 1981; Hair et al. 2010). Discriminant validity is exhibited in that all correlations between each pair of latent variables are less than the square root of each latent variable's average variance extracted (Fornell and Larcker 1981; Hair et al. 2010).

Given that the use of variables that exhibit measurement error results in biased parameter estimates (Bollen 1989; Cohen et al. 2003), we utilized the 'Latent Moderated Structural Equations' (LMS) algorithm developed by Klein and Moosbrugger (2000) to form interactions between continuous latent variables. LMS utilizes finite mixtures of normal distributions and is conducted using numerical integration within the Mplus program (Muthén and Muthén 2010). Given that estimation is completed using the expectation maximization (EM) algorithm (Dempster et al. 1977), the analyst can conduct a  $\Delta\chi^2$  test to determine if the model containing interaction terms fits the data better than the nested linear model (Klein and Moosbrugger 2000). However, due to computation requirements necessary to conduct multi-dimensional numerical integration (Muthén and Muthén 2010), rather than estimating all four interactions simultaneously, we estimated two separate models as shown in Tab. 3-4, where joint action in the ex-ante PMP and in the ex-post PMP interact with process control (Model B) and output control (Model C). All results in Tab. 3-4 are unstandardized given that it is

inappropriate to report standardized coefficients when interaction terms are involved because such standardized coefficients have little meaning (Aiken and West 1991; Jaccard and Turrisi 2003). The indicators were mean-centered prior to the analysis to avoid unnecessary multicollinearity.

Parameter	Model A: Linear Terms		Model B: ProCon Interactions		Model C: OutCon Interactions	
	Estimate	Z-Value	Estimate	Z-Value	Estimate	Z-Value
OutCon → Oppor	0.074	0.410	0.086	0.489	0.081	0.434
ProCon → Oppor	-0.217	-1.544*	-0.235	-1.657**	-0.215	-1.469*
ExAnte → Oppor (H1a)	-0.375	-3.233***	-0.339	-2.907***	-0.293	-2.387***
ExPost → Oppor (H1b)	0.172	1.498*	0.127	1.079	0.063	0.455
ExAnte*ProCon → Oppor (H2a)			0.148	1.580*		
ExAnte*OutCon → Oppor (H2b)					0.131	1.298*
ExPost*ProCon → Oppor (H3a)			-0.221	-2.254**		
ExPost*OutCon → Oppor (H3b)					-0.205	-1.906**
Oppor → Perform (H4)	-0.370	-5.105***	-0.368	-5.104***	-0.368	-5.117***
OutCon → Perform	0.018	0.142	0.021	0.163	0.009	0.071
ProCon → Perform	0.127	1.353*	0.124	1.265	0.133	1.407*
ExAnte → Perform	0.085	0.941	0.097	1.074	0.097	1.094
ExPost → Perform	0.106	1.137	0.093	0.979	0.096	1.022
R <sup>2</sup> Oppor	0.147		0.189		0.169	
R <sup>2</sup> Perform	0.381		0.381		0.381	
AIC	14,536.1		14,533.5		14,535.4	
$\Delta\chi^2$			5.971**		4.730**	

Note: \*\*\* p-value < 0.01; \*\* p-value < 0.05; \* p-value < 0.10

ExAnte = Joint action in the ex-ante PMP; ExPost = Joint action in the ex-post PMP; OutCon = Output control; ProcCon = Process Control; Oppor = Opportunism; Perform = Alliance performance

Tab. 3-4: Unstandardized coefficients for the SEM model

### 3.3.4. Hypotheses test results

Tab. 3-4 provides the results of the direct as well as the interaction effects. The effect of joint action in the ex-ante PMP on opportunism is negative and significant in both relevant models (-0.339,  $p < 0.01$  in model B, and -0.293,  $p < 0.01$  in model C), supporting hypotheses H<sub>1a</sub>. Contrary to hypotheses H<sub>1b</sub>, joint action in the ex-post PMP has a positive, yet insignificant effect on opportunism (0.127,  $p > 0.10$  in model B, and 0.063,  $p > 0.30$  in model C), which leads us to reject hypotheses H<sub>1b</sub>.

We also find a positive interaction effect of joint action in the ex-ante PMP with both, process (0.148,  $p < 0.10$ ) and output control (0.131,  $p < 0.10$ ), providing support for H<sub>2a</sub> and



H<sub>2b</sub> and the assumption that the governance forms are substitutive in nature. In hypothesis H<sub>3a,b</sub>, we posit that joint action in the ex-post PMP is complementary to process and output control and they have a negative interaction effect with respect to opportunism. These two hypotheses are also supported as the interaction is negative and significant (-0.221,  $p < 0.02$  for process control and -0.205,  $p < 0.03$  for output control). Together with joint action in the ex-ante and joint action in the ex-post PMP, process control ( $R^2 = 18.9\%$ ) and output control ( $R^2 = 16.9\%$ ) explain a substantial part of the variance in opportunism.

Hypothesis H<sub>4</sub> postulates a negative effect of opportunism on alliance performance. The results support this; the path coefficient is negative and highly significant (-0.368,  $p < 0.001$  in both models). As a result of this strong interrelationship, the  $R^2$  value of alliance performance is 38.1%, which indicates that a substantial part of alliance performance is directly related to opportunism within the horizontal alliance.

### **3.4. Discussion and implications**

#### **3.4.1. Theoretical implications**

The notion of governance to address exchange hazards and to reduce opportunism has emerged as a central element of managing relationships (Das 2004; Das and Rahman 2010). While it is undisputed in literature that both forms of governance, relational governance as well as formal control, are suitable to mitigate opportunistic tendencies of companies within an alliance, no consensus has been reached on how these governance forms interact (e.g., Kale and Singh 2009; Sundaramurthy and Lewis 2003). While researchers such as Wang et al. (2011), Gulati (1995), and Dyer and Singh (1998) argue for a substitutive nature of interplay and thus promote the use of only one governance mode at a time, others argue for a complementary nature and promote a simultaneous usage of both (e.g., Aalbers 2010; Cannon et al. 2000; Poppo and Zenger 2002).

Our research highlights that the prior arguments may have been too categorical in nature by painting either a black or a white picture. We show that the nature of interplay depends on the legitimacy for formal control and propose that the key to such legitimacy are social contracts that are shaped by the relational aspects of the alliance. Building on social contract theory (Dunfee et al. 1999), joint action in key aspects of the alliance will not only establish relational norms, but also specific social contracts that represent the shared understanding about what is fair to do with respect to the alliance and what not (Heide et al. 2007).

We show that joint action in the *ex-ante* PMP is substitutive while joint action in the *ex-post* PMP is complementary to formal control. The reason for this difference is that these two forms of joint action establish very different social contracts. The former creates an understanding that gives autonomy to the individual company, while the latter shapes an understanding of close engagement and interaction between all alliance partners. Thus, only joint action in the *ex-post* PMP legitimizes formal control and the rather invasive actions inherent to it. Yet, consistent with Heide et al. (2007), we show that it is only the legitimate use of formal control that promotes its positive and avoids its negative sides. Extending the ideas of Heide et al. (2007), we show that one way to establish such social contract is via close interaction and relational governance. Therefore, social contract theory is the key to understanding the interplay of relational governance and formal control.

In addition to those main findings of this research, we also provide a more thorough understanding with respect to the effects that joint action has during different phases of the PMP with respect to curbing opportunism. A differentiation is made to allow for more refined insights concerning the focus of joint action in alliance processes. Our results show that this differentiation is necessary as differing results are obtained; joint action is most effective in

the *ex-ante* PMP compared to joint action in the *ex-post* PMP when it comes to mitigating opportunism.

Additionally, we view the link between opportunism and alliance performance. Even though, opportunism has been found to generally have considerable negative effects on inter-organizational relationships, no confirmation about its effects with respect to the idiosyncratic setting of horizontal alliances has been provided. Our results show that also in this setting, opportunism has substantial negative performance effects.

### **3.4.2. Managerial implications**

First of all, this research reinforces the assumption that avoiding opportunism is key to relationship success (Das and Rahman 2010) also holds true for horizontal alliances. Thus, companies should direct management effort towards addressing exchange hazards and reducing opportunism.

Second, the results of this research highlight how important joint action in the PMP is to address the issue of opportunistic tendencies that any of the partners of the horizontal alliance may have. The strongest leavers here are joint action in the process of selecting appropriate performance measurement indicators and establishing goal targets. This is a process in which the motives and objectives of the individual partner meet those of the other alliance partners – with upfront unknown outcome. This joint action early on is vital in providing a sound basis that helps curbing opportunism. In contrast, holding all things constant, joint action in the later stages of measurement and analysis does not reduce opportunism at all.

When asking oneself whether joint action in the *ex-ante* PMP should be complemented by formal control, the answer is very clear. Both, process and output control are no sensible complements to this form of joint action. Combining those two approaches actually spurs opportunism instead of reducing it. The reason is that it is missing legitimization and when-

ever legitimization is missing for such an intrusive approach like formal control, its application will actually hamper the development of good relations and breed a situation of mistrust. Consequently, whenever managers feel the necessity of using process or output control, it proves to be important to ensure the thorough legitimization for this in order to avoid the negative sides formal control may bring with it.

### **3.5. Limitations and further research**

In conclusion, the present research provides sound insights on the interplay of relational governance and formal control mechanisms. Still, some limitations of this research have to be pointed out.

First, our research uses data for horizontal alliances of LSPs for hypothesis testing. Even though, we do not expect the findings to differ for other horizontal alliances, we encourage further research with respect to the interaction effects of relational governance and formal control by analyzing other types of horizontal alliances.

Second, joint action is a concept that is particularly suitable for set-ups that promote mutual actions. This is most pronounced in situations when partners are cooperating on eye-level, having equal rights and equal duties. In a vertical buyer-supplier relationship, however, the application of joint action might be less effective as *qua* set-up, dependency situations exist since the buyer relies on the outputs of the supplier for their own input (Rindfleisch 2000). Thus, to clarify the effectiveness of applying joint action in a vertical alliance setting, we encourage research that focuses on buyer-supplier relationships.

Further, we concentrate in our study on joint action in the PMP as relational governance form. Although, PM has been identified to be one of the most central processes of a business venture (Bititci et al. 1997), joint action in other key processes might as well positively function as relational governance form. In this respect, social contract theory should be consid-

ered to find out to what extent the joint accomplishment of other key alliance processes create underlying agreements that serve as a legitimization for the complementation by formal control mechanisms. Thus, we encourage researchers to take a closer look on the effectiveness of joint action in other alliance processes in mitigating opportunistic partner behavior.

Last, our findings emphasize the importance of social contracts as they prove vital for understanding the roles and reactions that can be observed in relationships. Social contracts, developed through mutual activities, constitute the foundation for future actions. In the present study, we focus on the establishment of legitimacy for formal control mechanisms through conducting joint action in the PMP. We are, however, certain that social contracts can serve as explanatory factor in other areas also by clarifying why in interactions some processes do or do not harmonize with each other. Therefore, we promote the application of social contract theory for further research in the supply chain and alliance domains.

## **4 Alliance performance measurement as a field of conflict: A contingency approach regarding preventive group processes<sup>4</sup>**

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<sup>4</sup> This chapter is based upon the eponymous unpublished working paper co-authored with Carl Marcus Wallenburg.

## 4.1. Introduction

Alliances have become an important element in the business environment as they are seen by companies as an organizational set-up to counter the increasing complexity of supply chains, increasing competition, and rising demands of customers (Das and Kumar 2010; Kale and Sing 2009; Schmolzi and Wallenburg 2011). An alliance is a voluntary arrangement between two or more firms "involving [the] exchange, sharing, or co-development of products, technologies, or services" (Gulati 1998, p. 293). This definition emphasizes the aspect of interaction between the partnering firms, which in combination with the inherent complexities of this organizational form, often leads to conflict as a common outcome (Mohammed and Agnell 2004; Wallenburg and Raue 2011).

Conflicts are "the experience between or among parties that their goals or interest are incompatible or in opposition" (Korsgaard et al. 2008, p. 1224) and can, in a cooperative venture, surface in many different areas; some of which are more central to the continuance and well-being of an alliance than others. Thus the emergence of conflicts is of increasing concern to the degree that it relates to essential alliance activities (Das and Teng 2003). One of these key areas is performance measurement (PM) (Bititci et al. 1997), which involves defining metrics and targets for the alliance (Forslund 2012) – a field where the potentially different goals and objectives, but also different management approaches meet and clash (Beamon 1999; Forslund and Jonsson 2007). As such, PM, on the one hand, is an alliance area prone to conflict. On the other hand, when these differences meet, they also become apparent and can potentially be eased, which in turn substantially lowers overall potential for conflict within the alliance. In this respect, prior research has found the two group processes, joint actions and information sharing, to be methods for effectively preventing the manifestation of conflicts (Korsgaard et al. 2008; Moye and Langfred 2004). Especially in the context of horizontal alliances that are determined by a multilateral set-up (Schmolzi and Wallenburg 2011),

which implies a multitude of opinions, mutual activities through group processes in PM are a means to genuinely involve partners, and hence, reduce the potential for dissent.

However, the emergence and manifestation of conflicts is not merely subject to the area in which they arise, but is also subject to the specific context in which they develop (Vaaland and Hakansson 2003; Wall and Callister 1995). In this respect, the power structure within an alliance has been identified to be a decisive factor influencing whether conflict potential manifests itself into actual conflict (Tjosvold et al. 2001).

We build on this prior performance measurement and conflict research and develop a model that shows that PM is a relevant field with respect to manifestation of conflict within a horizontal alliance, that group processes are a useful approach to counteract the conflict potentials inherent in the alliance, and that the effectiveness of the group processes depends on the specific power structure of the alliance. To incorporate the latter aspect, we employ a contingency approach and follow Dant and Schul (1992) in distinguishing symmetrical and asymmetrical power-relations.

With our work we extend past research which generated insights that almost exclusively focused on differing conflict types and their outcome effects (e.g., Jehn 1997a; Parayitam and Dooley 2011), and post-manifestation topics such as conflict management strategies (e.g., Parry et al. 2008; Rahim 2002). We develop a conceptual model by hypothesizing the effects that joint action and information sharing in PM have on the two primary types of conflict (i.e., cognitive and affective conflict) (Amason 1996) with respect to the power structure inherent in the horizontal alliance. To test these relationships, structural equation modeling based on a sample of 193 logistics service providers (LSPs) engaged in horizontal alliances is applied.



## 4.2. Conceptual framework

### 4.2.1. Conflict types and their outcomes

Mutual dependencies that require continuous interactions among alliance partners (Stern and Reve 1980), different viewpoints concerning temporal aspects (i.e., short-term vs. long-term) (Das and Teng 2000), diverging goals (Doz 1996), and in the special case of horizontal alliances, co-opetition (i.e., the simultaneous existence of cooperation and competition) (Das and Teng 2000; Wilhelm 2011), lead inevitably to tensions and conflicts among alliance partners (Fey and Beamish 2000). Regarding the outcome of conflict, an undifferentiated consideration "can obscure important differences among different types of [...] conflict" (Parry et al. 2008, p. 213). We agree with that statement and, therefore, view both established dimensions of conflict, namely cognitive and affective conflict (Amason 1996), as dependent variables in our research as these have been found to have differing effects (Amason 1996; De Dreu and Weingart 2003).

*Cognitive conflict* refers to disagreements between alliance partners around task related issues (Das and Kumar 2010; Koorsgaard et al. 2008) that revolve around the question of "how best to accomplish an organization's objectives" (Amason 1996, p. 127). *Affective conflict*, in contrast, focuses on personal issues and is emotional in nature (Amason and Sapienza 1997; Jehn 1994; Mooney et al. 2007). While research agrees about the dysfunctional nature of affective conflict (e.g., De Dreu 2006; Parayitam and Dooley 2011), research on cognitive conflict produces differing results. Jehn (1995) argued that cognitive conflict is functional because it improves team effectiveness, and Amason (1996) found it to be beneficial for strategic decision making. Yet, these results are in contrast to various researchers suggesting that cognitive conflict is generally harmful for the alliance (e.g., Andrade et al. 2008; De Dreu and Weingart 2003). A third research stream views the effect as contingent to the routineness of the task (Jehn 1997b; Parry et al. 2008). Here, the argumentation is that in complex tasks

such as innovation and strategic decision making that require out of the box thinking, cognitive conflict is positive as disagreements and the associated friction among partners create new ideas and trigger improvement of the task (Jehn 1997b; Parry et al. 2008; Vaaland and Hakansson 2003). In contrast, when cognitive conflict arises in routine tasks that are characterized by a low level of variability and high repetitiveness (Hall 1972), dissent is counterproductive as its management is time consuming and frustrating for the partners (Jehn 1997b). This is consistent with the empirical findings for horizontal LSP alliances, where Wallenburg and Raue (2011) show that conflict only (and even there not in all cases) has a positive effect in the non-routine field of innovation generation. Knowing that conflicts heavily influence different key outcomes of horizontal alliances, it is important to understand the formation of conflicts and how they can be counteracted before they manifest themselves and are able to show their negative sides.

#### **4.2.2. Power structure in horizontal alliances**

Literature has shown that how conflict emerges and manifests itself is dependent on the business context of the alliance (Vaaland and Hakansson 2003; Wall and Callister 1995) as it determines how "a firm's practices, procedures and processes are shaped and constrained" (Claycomb and Frankwick 2004, p. 21). One central contextual variable that affects conflict is the power structure within the alliance (Dant and Schul 1992; Tjosvold et al. 2001; Vaaland and Hakansson 2003). Literature in this respect differentiates between legal legitimate power that is derived from contractual agreements and traditional legitimate power that relates to the perceived power structure in the relationship (e.g., Brown et al. 1983; Kasulis and Spekman 1980; Stern and El-Ansary 1977). While contracts might specify equal legal power, the partners' actual power, or put reciprocally, actual dependency in the relationship varies with respect to the importance they attach to this alliance. The latter determines the effort that is put into the alliance by the individual companies (Claycomb and Frankwick

2004). Building on these arguments, the literature distinguishes two conditions: (1) symmetrical power-relation and (2) asymmetrical power-relation (Dant and Schul 1992).

A *symmetrical power-relation* describes the state in which the individual partner depends on the alliance to the same degree to which the alliance depends on this individual partner and its contributions (Lusch and Brown 1996). This is a balanced power situation, where the alliance partners meet as equals, having the same traditional legitimate power (Frazier 1999; Jarrat and Marrison 2003). Further, in such set-ups the degree of mutuality can be expected to be high as the partners need each other to reach both, their individual goals as well as the goals of the alliance (Das and Teng 2003).

An *asymmetrical power-relation*, in contrast, signifies that there is an imbalance with respect to traditional legitimate power, as either the individual partner is more dependent on the alliance than the alliance on it or vice versa (Frazier 1999). This enables some partners to exert their power over the other partners (Jarrat and Marrison 2003; Wilhelm 2011). In such a set-up, more hierarchical and authoritarian behavior can be expected, shown in aspects such as unilateral decision making compared to symmetrical power-relations (Aldrich 2007).

#### **4.2.3. Performance measurement as a field of conflict**

Conflict can emerge in all areas of an alliance in which alliance partners interact with each other (Parayitam and Dooley 2011). However, conflict is more relevant and more prone to surface in areas that are central to the partners and the success of the alliance (Das and Teng 2003). One of the most important activities to an individual firm but also to an alliance is PM (Bititci et al. 1997). It does not only involve the mere measurement of effectiveness, but through its different steps, it is an instrument in guiding and controlling an organization (Neely et al. 1995; Wouters and Wilderom 2008) – in our case a horizontal alliance.

Alliance PM has various attributes that makes it a likely source of conflicts. On a formal level, the question about the *what* and *how* (i.e., *what* will be measured *how*), are origins of possible disagreements (Nguyen 2011). With respect to the *what*, disputes can arise when the partners have to decide on what are the decisive aspects of the alliance (i.e., goals, objectives, and ambitions) and how they should be prioritized and operationalized for measuring and monitoring (Rey-Marston and Neely 2010). Subsequently, consent is needed on target values for the corresponding performance indicators (Forslund and Jonsson 2007). However, the multitude of opinions in a horizontal alliance due to the multilateral set-up, and hence, the possibly very different alliance partners, might impede a clearly defined and consistent approach to PM resulting in the use of individual key performance indicators (KPIs) by the individual firms (Busi and Bititci 2006; Lohmann et al. 2004). That, in turn, sows the seed for conflict as even using the same terminology for KPIs does not ensure that the alliance partners actually measure and report the same things since the exact procedures to come up with values for the indicators may still vary (Forslund 2012; Lai et al. 2002). This potentially leads to situations in which partners think that they are discussing about the same things, but in reality talk about different things, not realizing that slight or even big differences between their understandings are present (Forslund and Jonsson 2007; Simatupang and Sridharan 2002). A good example for this is service level, where even a seemingly straightforward indicator like OTIF (on-time-in-full) may be measured differently by each company, because, for example, by measuring time of arrival in a different manner.

Concerning the *how* to measure, partners of the horizontal alliance are faced with the struggle to find a compatible way of actually conducting PM. In this respect, alliance partners may have no concerted and coordinated approach to measurement, with the result that partners pursue individual PM processes (Holmberg 2000; Simatupang and Sridharan 2002). However, the split up of actually interdependent processes creates interface problems that can

lead to conflicts (Vaaland and Hakansson 2003) as addressed by the decoupling principle of Stinchcombe and Heimer (1985), which states that interdependent activities should be carried out "under the same authority" (p. 70). One reason is that already small deviations in measurement processes can lead to a differing basis of results which potentially triggers conflict as in subsequent steps, partners of the horizontal alliance discuss performance results that are actually not comparable. The fact that a horizontal alliance most often is comprised of not only two partners, as in dyadic buyer-supplier relationships, but rather numerous partners (Schmoltzi and Wallenburg 2011), additionally complicates this situation and makes differences in PM more critical.

Both aspects mentioned (the *what* and the *how*) easily lead to dissent among the horizontal alliance partners, as ultimately, PM depicts the operation model, and thus, the priorities and goals as well as the processes of the horizontal alliance (Lohman et al. 2004). PM has a central role in steering the alliance and in understanding its context (Holmberg 2000). Consequently, it is focal to all alliance partners and a field of conflict where differing opinions and interests clash.

#### **4.2.4. Group processes for pro-active conflict prevention**

Conflict literature until today has mainly focused on post-manifestation issues of conflict, covering topics such as which conflict management techniques exist and how conflict can be resolved or minimized (e.g., Fey and Beamish 2000; Parry et al. 2008). However, this overlooks that partners in an alliance should act at a much earlier state because conflict, once present, is rather difficult to control (Amason et al. 1995) and requires considerable effort to manage and resolve it (Fey and Beamish 2000; Parry et al. 2008; Wallenburg and Raue 2011). Therefore, it is important to shift attention to the ways that actively counter the emer-

gence of conflict by also promoting preventive instead of reactive means (Andrade et al. 2008; Rahim 2002).

Manifestation of conflict stems "from the failure of alliance partners to coordinate" (Das and Kumar 2010, p. 157). As it is triggered when interaction takes place (Korsgaard et al. 2008), efforts to limit the emergence of conflict via preventive measures must focus on points of interaction. Here, two different group process are of vital importance (Korsgaard et al. 2008; Moye and Langfred 2004): 1) joint action in PM and 2) information sharing in PM

#### **4.2.5. Joint action in PM**

Generally, joint action means the involvement of partners in essential alliance activities (Heide and John 1990; Joshi and Stump 1999). Directed at PM, it refers to the degree to which alliance partners actively engage in coordinating their PM activities (Bonner et al. 2005). It reflects the argument of Wall and Callister (1995) that structures, which "increase the strength of the ties between groups" (p. 522) help to prevent conflicts. Consistent with this, Kozlowski and Bell (2003) call for cooperative mechanisms in preventing conflict, in addition to the mere exchange of information.

Joint action in key alliance activities (as in this case PM) is a key element of relational governance (Heide and John 1990) that increases understanding of the other alliance partners. Following Transaction Cost Economics (TCE), the relational norms and trust created via these joint actions improve coordination and reduce exchange hazards (Lai et al. 2012). Following a social exchange perspective (Poppo and Zenger 2002; Granovetter 1985), exchanges within an alliance are embedded within a system of relational norms and social interactions which create mutual confidence that no party will exploit others' vulnerabilities even if there is such opportunity (Kale et al. 2000). Further, the involvement of alliance partners and corresponding collaboration increases commitment and ownership (Dyer and Song 1997). As the

partners feel that their voice and contribution to directly address points of concern at a rather early stage is valued, the motivation of alliance partners is increased, which helps to minimize the risk that dissent manifests into conflicts (Song et al. 2000; Wall and Callister 1995).

Moreover, the participative approach of joint action creates a common domain that builds the foundation for establishing a mutual understanding about the task as the partners' motives, opinions, and know-how are considered (Moye and Langfred 2004; Vaaland and Hakansson 2003). By this, misunderstandings and "mutual feelings of frustration" (Etgar 1979, p. 65) are avoided already early on: alliance partners are enabled to put not only the other partners' actions in context, but also a stage is provided for effectively transmitting their own actions (Song et al. 2000), creating the conditions to clear up possible task-related contradictions.

The application of joint action in PM, furthermore, transmits a positive signal and creates an *esprit de corps*. Joint PM activities strengthen interpersonal relations (Tjosvold 1989; Wall and Callister 1995) and have the potential to establish a team spirit that leads to a benevolent and trusting atmosphere and to establish pride among the partners for being a member of the alliance (Menon et al. 1996; Rose et al. 2007). This reduces the risk that the different partners will be aggressive towards each other (Barclay 1991), which in turn, reduces potentials for affective conflicts.

While the aforementioned arguments highlight the potential for joint action in PM to reduce both, affective and cognitive conflicts in alliances, we will in the hypotheses development section show that these potentials can only be effectively captured and translated into less conflicts in the case of horizontal alliances that are characterized by a symmetrical power-relation.

#### **4.2.6. Information sharing in PM**

Information sharing in PM refers to sharing important and confidential information regarding the process as well as the results of PM (i.e., values attained for the performance indicators). Such information sharing has been found to be vital (Korsgaard et al. 2008; Moye and Langfred 2004) as it facilitates transparency with regard to performance information. Through the "communication with other alliance members related to coordination activities, task details, task progress, and reasoning for task decisions" (Moye and Langfred 2004, p. 384) are clarified. This aids in creating a common understanding among the partners (Simatupang et al. 2002) that improves coordination (Lee et al. 2000), which in turn fosters a benevolent working relationship and reduces the level of conflict (Moye and Langfred 2004).

With this information on hand, problems can pro-actively be prevented as partners are able to make more thorough decisions (Stank et al. 1999). This reduces the risk of errors, which, in turn, is associated with less conflict about task related issues (Moye and Langfred 2004). Further, information sharing reduces the level of uncertainty (Kwon 2004) as the alliance partners are able to understand a partners' way of thinking (Dekker 2004), minimizing animosities and misinterpretations that could lead to both, affective and cognitive conflict.

In comparison to joint action in PM, however, the extent of exchange is substantially lower as information sharing focuses on informing partners about issues and results of PM and therefore is not as comprehensive in providing insights and a common understanding. Thus, information sharing can be considered a "light" version of joint action as in the latter group process, more in-depth insights through partner involvement in PM are provided. Moreover, the partner merely receiving information from other alliance partners cannot rule out that the information provided is filtered or even falsified (Li and Lin 2006). In the case of joint action this situation is different. The direct partner involvement largely eliminates this risk as the close collaboration increases the partners' ability for verification. Thus, infor-



mation sharing is not as effective as joint action in establishing relational norms and trust and serving as effective means for coordination and mitigating exchange hazards.

While the aforementioned arguments highlight the potential for information sharing in PM to reduce both affective and cognitive conflicts in horizontal alliances, we will in the hypotheses development section show that these potentials are most relevant for translating into reduced conflicts in the case of horizontal alliances that are characterized by asymmetrical power-relation. The conceptual model based on this reasoning is displayed in Fig. 4-1.

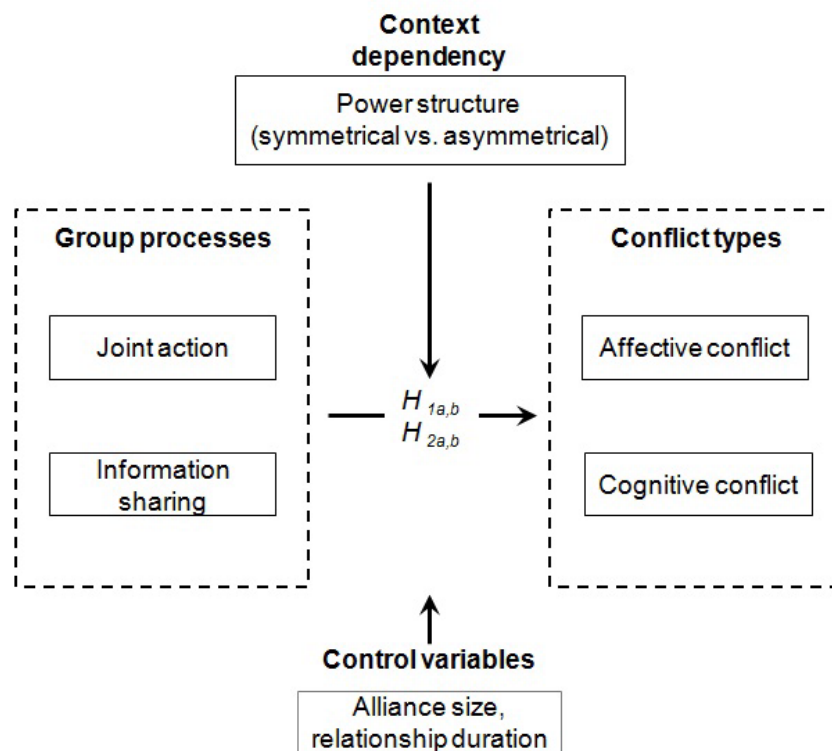


Fig. 4-1: Conceptual model

### 4.3. Hypotheses development

Prior research points out that how conflict emerges and manifests itself depends on the business context of the alliance (Vaaland and Hakansson 2003; Wall and Callister 1995). The importance of considering corresponding contextual factors is further outlined by Contingency Theory which suggests that the effectiveness of activities and processes applied in an alli-

ance depends on the context (Drazin and Van de Ven 1985). One central contingency that affects conflict within an alliance is its power structure (Dant and Schul 1992; Tjosvold et al. 2001; Vaaland and Hakansson 2003).

#### **4.3.1. Joint action context-dependent effectiveness**

Joint action in PM is an approach that aims at involving all alliance partners in the PM and is in that sense an approach built on providing mutual influence. As such, it promotes an atmosphere of forbearance, mutual respect, and balanced reciprocity, and reduces ex-post transaction costs (Schmoltzi and Wallenburg 2012).

This approach is well suited for horizontal alliances with symmetrical power-relations where all partners have comparable power. Equal traditional legitimate power signifies equal dependency. In such a setting, the actions of one alliance partner significantly influence the effectiveness of others and the alliance overall (Das and Teng 2003; Moye and Langfred 2004; Wall and Callister 1995). Thus, the partners in order to achieve individual and mutual benefit have to give and take (i.e., they are reciprocal dependent). One way that fosters this interaction is the engagement in collaborative actions in key alliance areas which provides benefits for the partners at two levels. First, joint action act as a safeguard against partner misbehavior as relational norms and trust are established (Lai et al. 2012). Second, being reciprocally dependent, the alliance partners are on the one hand required to contribute for the alliance to be successful, but on the other hand are also more willing to do so, implying that they will open up, which in turn generates insights into their motives, opinions, and know-how (Frazier 1999; Lusch and Brown 1996). This helps the partners to put partner behavior and actions into context, which fosters a benevolent atmosphere and smoothes possible contradictions (Moye and Langfred 2004; Vaaland and Hakansson 2003).

Furthermore, as the partners are aware of their power situation within the alliance, a certain mode of expectations develops that, following social contract theory, are reflected in "norms based in informal social contracts" which "essentially frame their relationship" (Dunfee et al. 1999, p. 29). One such expectation is that they have equal say in terms of decisions made and processes conducted. The involvement of partners in operational processes creates a platform to pursue this claim as it provides them with the opportunity to express possible concerns that can be resolved while collaborating with the alliance partner. In this regard, joint action in PM is compatible with alliance partners that follow an approach which is characterized by mutuality.

The situation is very different in alliances with an unequal distribution of traditional legitimate power among the partners (i.e., asymmetrical power-relation), where some partners possess substantially more power than others. The stronger partners are more likely to pursue their own agenda as they do not feel the same reliance on the alliance (Lusch and Brown 1996). Further, they tend to consider themselves to be "in power", try "calling the shots" and in that sense dominate processes in the alliance (Anderson and Narus 1990; Jarrat and Marrison 2003) – also PM processes. This behavior is to be expected as the powerful partners will want to push through their own interests instead of letting all partners contribute to and influence the outcome equally. This implies that tension will arise between the actual power situation and the expectations created at the less powerful partners in the process of joint action, which provides a signal of mutual influence to them. This growing gap between expectations, in turn, creates friction among the partners. Hence, utilizing partnership-like group processes such as joint action in a context in which, qua distribution of power, the partners are not at eye-level, is not suitable and effective. Instead, this may be a source of conflict in itself.

Consequently, joint action in PM is a more effective means in the setting of symmetrical power-relation, compared to an asymmetrical set-up, to reduce both, affective and cognitive conflicts, because it addresses both levels of these conflicts, meaning the task related level of cognitive conflict as well as the personal level of affective conflict. Thus, we hypothesize:

*H<sub>1a,b</sub>: The group process of joint action in PM is more effective in reducing a) affective and b) cognitive conflict in horizontal alliances with a symmetrical power-relation than in horizontal alliances with an asymmetrical power-relation.*

#### **4.3.2. Information sharing context-dependent effectiveness**

As outlined in the section on group processes, information sharing in PM can be viewed as a “light” version compared to joint action as the level of exchange, and thus also the transparency provided is much lower. Further, information sharing does not develop the same relational norms and trust that have the potential to mitigate conflict. Consequently, in alliances with symmetrical power-relation, information sharing has only little or even nothing to add on top of the potentials created via joint action in PM, and thus, joint action here will be substantially more effective in mitigating conflict.

In contrast, when power is unevenly distributed, the stronger alliance partners are less interested in building up involving group processes as "constant coordination and mutual adjustment among group members is not necessary for the group to function successfully" (Moye and Langfred 2004, p. 390). Thus, joint action in this power-setting is not feasible as the partner in power is less willing to make the investment of involving weaker partners in processes that would allow for detailed insights (Frazier 1999; Lusch and Brown 1996). Consequently, these alliances can only rely on information sharing in PM, which constitutes a less pronounced form of group processes to mitigate conflict. This approach entails social

contracts that differ from those of joint action in the sense that it allows for one or a few partners to dominate decisions on what and how much information is exchanged. In that sense, information sharing is compatible with companies wanting to dominate, while still providing potential to prevent conflict from manifesting itself.

Consequently, information sharing in PM is an effective approach to prevent the manifestation of affective and cognitive conflict in alliances with asymmetrical power-relations, whereas in symmetrical power-relations this is not the case. Thus, we hypothesize:

*H<sub>2a,b</sub>: The group process of information sharing in PM is more effective in reducing a) affective and b) cognitive conflict in horizontal alliances with an asymmetrical power-relation than in horizontal alliances with a symmetrical power-relation.*

## **4.4. Methodology**

### **4.4.1. Sampling and data collection**

For testing the hypotheses, primary data from service companies in the logistics sector was collected. The logistics industry was chosen as it is one of the most important industries in Germany (accounts for 5% of the German GDP (Destatis 2012)) and worldwide. We employed a key informant approach (Phillips and Bagozzi 1986) and targeted senior managers of these companies. The executive management level was chosen as appropriate point of contact due to the rather small size of these companies (50% of the surveyed LSPs have less than 100 employees – see Tab. 4-1 and Appendix 4.2) and the fact that the executive managers are still involved in major operational tasks such as alliance management.

We derived the sample from two commercial databases that provide company data of German companies with a turnover of more than €1 million and retrieved 3,100 email addresses of executive managers of LSPs. These managers received an email invitation with a personalized link to our web-based survey. To receive consistent data and to control for the

importance of the alliance, the key informants were explicitly asked to focus their answers on their strategically most important alliance (this does not imply that only successful alliances were considered as indicated by the mean and standard deviation performance scores displayed in Appendix 4.1). The questionnaire conducted in German language was based on existing scales. A qualitative pre-test with ten logistics researchers and seven CEOs of LSPs was carried out to ensure face validity. In this process, few minor alterations were made iteratively to the construct measurements until no further changes were suggested.

Overall, 362 responses were received, representing a response rate of 11.7%, which is adequate for comparable sample sizes (Wagner and Kemmerling 2010). Of these, 147 responses could not be used for the analysis as the respondents did not possess relevant alliance experience with other LSPs, a figure representative for the industry (Schmoltzi and Wallenburg 2011; Wallenburg and Raue 2011). Another 18 responses had to be discarded due to incomplete data and four responses were removed as they represented outliers as identified based on Mahalanobis distance (Byrne 2001), leaving 193 valid responses for analysis (see Tab. 4-1).

<b>Annual turnover (in €)</b>	<b>N</b>	<b>%</b>
1–5 million	51	26
>5–25 million	57	30
>25–100 million	37	19
>100–500 million	22	11
>500 million–5 billion	9	5
>5 billion	2	1
Not specified	15	8
<b>Total</b>	<b>193</b>	<b>100</b>

<b>Number of employees</b>	<b>N</b>	<b>%</b>
1–50	64	33
51–100	31	16
101–500	44	23
501–1000	20	10
>1000	22	12
Not specified	12	6
<b>Total</b>	<b>193</b>	<b>100</b>

*Tab. 4-1: Demographics of responding companies*

We followed established practices for testing non-response bias. First, the answers of early responders on all items were compared to those of companies responding late (Armstrong and Overton 1977; Wagner and Kemmerling 2010). Second, a follow-up study was conducted with 18 randomly chosen non-respondents, who received a questionnaire with 12 items of the original questionnaire (Lambert and Harrington 1990). Their responses were compared to the ones of the participants that completed the questionnaire in the first place. Neither of the described methods indicated significant differences ( $p < 0.05$ ) in the data. Furthermore, with respect to the study design we assured the anonymity of respondents (Chang et al. 2010) and pointed out that there are no right or wrong answers.

We controlled for common method bias (i.e., bias arising from the single source approach) by employing the measurement of the profit sharing mechanism as theoretically unrelated marker variable (Lindell and Whitney 2001; Podsakoff et al. 2003). The lowest correlation of this variable to the other items was 0.002 ( $p > 0.975$ ). In addition, we performed Harman's (1967) single factor test. For this, we conducted an unrotated factor analysis which yielded one factor that accounts for 34.7% of the variance. The results of both tests indicate that common method bias is of no concern.

#### **4.4.2. Measurement scales**

For the constructs of the present hypothesized model, we used previously established measurement scales and adapted them to the current study. The measurement of the constructs relied on multi-item, 7-point Likert type scales presented in the Appendix 4.1 and described in the following.

*Joint actions in PM* was measured based on Bonner et al. (2005) and refers to the extent to which the respondents' company integrates its alliance partners in PM. *Information sharing in PM* was captured based on the scale of Mohr and Spekman (1994) and refers to the extent

to which alliance partners keep each other informed about critical and proprietary information concerning PM. *Cognitive conflict* and *affective conflict* were measured based on Amason (1996). The construct for cognitive conflict measures the extent to which alliance partners experience task oriented conflicts, whereas the construct for affective conflict identifies the extent to which alliance partners experience emotional and personal incompatibilities or disputes.

To capture the moderator and to assess the power structure inherent to the alliance, we used two scales of Ganesan (1994). The individual firms' dependence on the alliance was assessed by measuring to what extent the alliance was important to them. The alliances' dependency on the individual firm was measured by asking for the extent to which the respondents' company is important for the alliance. For the multi-group analysis, the sample was divided into two groups based on the power structure that was calculated by subtracting the average score of the items of the first construct from the average score of the items of the second construct. Absolute values up to 0.75 (i.e., between -0.75 and 0.75) are considered as symmetrical power-relation (N=72) as the respondents' company depends on the alliance to a similar degree to that the alliance depends on it. Absolute values above 0.75 are considered as asymmetrical power-relation (N=121) as it induces a power imbalance between the respondents' company and the alliance. The absolute value of 0.75 was chosen for two reasons: On the one hand, this value must be as small as possible to capture the reciprocal dependency of the respondents' company with the alliance and vice versa, ensuring that values below really reflect a symmetrical power-relation. On the other hand, this value must be large enough to yield an adequate number of companies for testing in order to ensure reliability and validity with regard to the calculations performed via structural equation modelling.



To validate the measurement scales of the structural model we conducted an exploratory factor analysis using SPSS 20, extracting four factors, which are equivalent with our four focal constructs (see Appendix 4.3). Subsequently, we conducted a confirmatory factor analysis with AMOS 20 to assess the reliability and validity of the measurement model, which revealed an adequate fit ( $\chi^2 = 173.0$  with  $df = 81$ ;  $\chi^2/df = 2.14$ ; CFI = 0.96; TLI = 0.94; RMSEA = 0.077) (e.g., Baumgartner and Homburg 1996; Browne and Cudeck 1992). All factor loadings are significant at  $p < 0.001$ , supporting convergent validity for the constructs used. Furthermore, the recommended minimum value for item reliability of 0.4 (Bagozzi and Baumgartner 1994) is well exceeded for all items. Additionally, the lowest Cronbach's alpha and the lowest composite reliability for the latent constructs is 0.86, which well exceeds the required thresholds of 0.7 and 0.6 respectively (Bagozzi and Yi 1988; Nunnally 1978) (see Appendix 4.1). Furthermore, Fornell and Larcker's (1981) procedure to test discriminant validity was used. In all instances, the squared correlations between any pair of the four constructs used was lower than the average variance extracted of the corresponding constructs (see Appendix 4.4).

#### **4.4.3. Control variables**

We controlled our model for alliance size (de Celis and Lipinski 2007) and relationship duration (Schreiner et al. 2009). The first variable captures the number of companies engaged in the horizontal alliance, whereas the second variable captures the number of years the relationship exists. Both variables are intended to account for any influence that the alliance size as well as the relationship duration may have on the two conflict types, affective and cognitive conflict (see Appendix 4.1).

#### 4.4.4. Results

The hypothesized structural equations model was tested by conducting a multi-group analysis using AMOS 20 to identify the moderating effects of the power structure inherent in the alliance. For this, all parameters of the model were estimated separately for the two groups under study. The fit indices of the model show good model fit for the hypothesized model ( $\chi^2 = 701.9$  with  $df = 312$ ;  $\chi^2/df = 2.25$ ; CFI = 0.91; TLI = 0.88; RMSEA = 0.057) (e.g., Baumgartner and Homburg 1996; Browne and Cudeck 1992). Tab. 4-2 presents the results of the hypothesized relationships.

	Power structure				Difference		Hypothesis
	Symmetrical power-relation		Asymmetrical power-relation		z-score	P	
	Estimate	P	Estimate	P			
Joint action → Affective conflict (H1a)	<b>-0.574</b>	<b>0.005</b>	-0.023	0.890	<b>2.085**</b>	<b>0.019</b>	Support
Joint action → Cognitive conflict (H1b)	<b>-0.646</b>	<b>0.000</b>	-0.260	0.127	<b>1.549*</b>	<b>0.061</b>	Support
Information sharing → Affective conflict (H2a)	0.250	0.129	<b>-0.302</b>	<b>0.040</b>	<b>-2.502***</b>	<b>0.006</b>	Support
Information sharing → Cognitive conflict (H2b)	0.150	0.281	-0.100	0.479	-1.260	0.104	Weak Support
R <sup>2</sup> Affective conflict	20.0%		12.0%				
R <sup>2</sup> Cognitive conflict	36.0%		10.2%				

Notes: \*\*\* p-value < 0.01; \*\* p-value < 0.05; \* p-value < 0.10 (one-tailed)

*Tab. 4-2: Results of moderation analysis for power structure (unstandardized path coefficients)*

With respect to hypotheses H<sub>1 a,b</sub>, which postulate that joint action in PM is more effective in reducing both forms of conflict (i.e., affective and cognitive conflict) in symmetrical power-relations than in asymmetrical ones, our analysis provides support. In symmetrical power-relations, joint action in PM has a significant negative effect on affective conflict (-0.574;  $p < 0.01$ ) as well as on cognitive conflict (-0.646;  $p < 0.001$ ). In contrast, in an asymmetrical power-relation, joint action in PM has no significant effect, neither on affective conflict (-0.023; n.s.) nor on cognitive conflict (-0.260; n.s.). The differences for both relationships are significant and thus we conclude support for H<sub>1 a,b</sub>.

Hypotheses H 2<sub>a,b</sub> posit that the second group process, information sharing in PM, is more effective in reducing affective as well as cognitive conflict in asymmetrical power-relations than in symmetrical ones. Our results were only able to fully support hypothesis H 2<sub>a</sub> in asymmetrical power-relations for which information sharing in PM has a significant negative effect on affective conflict (-0.302;  $p < 0.05$ ), whereas the effect in a symmetrical power-relation is non-significant (+0.250; n.s.). Furthermore, the structural paths are significantly different ( $p < 0.01$ ). At the same time, the effect of information sharing in PM on cognitive conflict in symmetrical power-relations is also negative, but not significant (-0.100; n.s.). Here again, the moderation follows the hypothesized pattern (i.e., information sharing is more effective in asymmetrical power-relations). Yet, this difference is not significant ( $p = 0.104$ ), so that only weak support for H 2<sub>b</sub> can be concluded.

Further, our results show that the explanatory power of group processes is very substantial for symmetrical power-relations; the  $R^2$  is 20.0% for affective conflict and 36.0% for cognitive conflict. In contrast, group processes in PM in asymmetrical power-relations account for a substantially lower percentage of variance in conflict ( $R^2 = 12.0\%$  for affective conflict and  $R^2 = 10.2\%$  for cognitive conflict) (see Tab. 4-2). With regards to our control variables, we find that neither alliance size, nor relationship duration have a significant effect on both, affective and cognitive conflict.

## **4.5. Discussion and implications**

### **4.5.1. Theoretical implications**

The results of this study present several important theoretical implications with respect to conflict in horizontal alliances. Even though, conflict has been studied extensively in prior research (e.g., Amason 1996; Parry et al. 2008; Rahim 2002), the focus, so far, was mainly on post-manifestation topics such as conflict management, neglecting that conflict could be pre-

vented before emerging in the first place. The major drawback of the prior research that actually is concerned with conflict prevention is that it mostly builds on antecedents of conflict that are not really actionable, for example, the similarity of organizational climate (Fey and Beamish 2000) or goal uncertainty (Mooney et al. 2007). Exceptions are the studies of Moye and Langfred (2004), who tested the effect of information sharing in student groups and its effect on conflict and performance, and Nguyen (2011) who presented a model of pro-active approaches for handling conflicts such as selecting partner fit, partnership negotiation, and the build-up of relational quality among partners in international joint ventures. Here, our research goes one step further by focussing on actionable group processes (i.e., joint action and information sharing) in a concrete environment (i.e., PM) that can be applied to contribute to a reduction of the overall levels of affective and cognitive conflict within a horizontal alliance. This, at the same time, underscores the assumption that PM is of key importance to alliances in that it not only is an area prone to conflict, but also one with the potential to mitigate conflict.

To further refine our assertions, we applied Contingency Theory (Drazin and Van de Ven 1985). Here our findings first underscore the prior assumption that how conflict emerges and manifests itself depends on the alliance context (Vaaland and Hakansson 2003; Wall and Callister 1995) and that the power structure within the alliance is a relevant contextual variable (Dant and Schul 1992; Tjosvold et al. 2001; Vaaland and Hakansson 2003).

Second, prior findings are expanded in showing that the importance of group processes is not equal for symmetrical and asymmetrical power-relations. Group processes as preventive means are much more effective in addressing conflict in alliances in which the partners are cooperating on eye-level (i.e., in a symmetrical power-relation). This becomes evident when comparing the  $R^2$  for affective and cognitive conflict in the two contexts. While apply-

ing group process in PM only explains 12.0% of the variance in affective conflict and 10.2% in cognitive conflict in asymmetrical power-relations, the corresponding values are 20.0% and 36.0% respectively in symmetrical power-relations, indicating that group processes in PM are very effective in addressing potential conflict in the latter context.

Third, our results show that applying joint action in PM is most effective in symmetrical power-relations, while information sharing in PM is most effective in asymmetrical power-relations. The motivation to conduct a mutual approach such as joint action usually is based on partners that are reciprocally dependent, and hence, interested in maintaining the relationship (Lusch and Brown 1996). Otherwise, the partners would not be willing to do both, give and take in the relationship as well as provide insights into their motives, opinions and know-how (Frazier 1999; Lusch and Brown 1996). This is confirmed by the results of our study as joint action in a symmetrical power-relation is very effective in reducing conflict manifestation for affective and cognitive conflict. Prior expectations were that information sharing is rather effective in mitigating the risk of conflict manifestation in asymmetrical power-relations as in such a situation, the more powerful partner is less interested in establishing group processes that are involving in nature (Moye and Langfred 2004). In this case, stronger partners rather prefer information sharing where they can decide to what extent they disclose information. Our results were able to confirm this. Thus, we show with our research that the suitability as well as the effectiveness of group processes is very much dependent on the context (in this case the power structure) in which they are applied.

Further, additional analyses showed that conflict does not differ significantly between horizontal alliances with symmetrical and asymmetrical power-relations. The results, however, are not consistent with our prior expectations. Following Stern and Reve (1980), who state that "conflict potential and the magnitude of manifest dysfunctional conflict will be highest in

balanced power situations" (p. 58), we anticipated that when partners of an alliance meet as equals, having the same traditional legitimate power, they would be more prone to raise problematic issues and do not hold back points of conflict (Ephross and Vassil 1993 as cited in Wall and Callister 1995). In contrast, we expected that when alliance partners have unequal power and "alternative sources of [the] valued resources" (Dwyer et al. 1987, p. 17) are limited, the weaker partners would have to make concessions and subordinate themselves to the partners in power by raising less objections and accepting the modus operandi in order to sustain the relationship (Anderson and Narus 1990; Dwyer et al. 1987; Jarrat and Marrison 2003). Our results, however, do not confirm this expectation of different levels of conflict in the two alliances groups.

#### **4.5.2. Managerial implications**

The results of our study are of importance to practice in that they provide guidance to managing alliances in general, where conflict has been found to be especially pronounced (Das and Teng 2003), and horizontal alliances in particular. Our research provides managers with insights on how to prevent conflict potential to manifest itself in actual conflict.

The first important aspect that managers should keep in mind is that they need to shift their focus of attention from post-manifestation issues of conflict (i.e., conflict management techniques after the conflict has already emerged) to the question of how conflict can proactively be prevented. If conflict has already emerged, it is difficult to control (Amason et al. 1995) and necessitates considerable effort to manage and resolve it (Fey and Beamish 2000; Parry et al. 2008; Wallenburg and Raue 2011). In this respect, the present research found that PM is not only one of the most important aspects for alliance firms (Bititci et al. 1997), and hence, also the alliance as a whole, but it is also an area where conflicts can emerge, because within this area different viewpoints and approaches meet and clash.

Building on this, the results show that PM, besides being a potential source of conflict, can also be utilized to remedy this issue and to reduce the overall level of conflict – both cognitive and affective – in an alliance. The key to this is group processes such as joint action and information sharing in PM. However, the effectiveness of these group processes to proactively prevent the manifestation of conflict is very much dependent on the specific context of the alliance with respect to the power structure inherent in the alliance. Our results show that in symmetrical power-relations, in which the partners are cooperating on eye-level, managers should focus in such a setting on participative actions and partner involvement during the PM. Since our results show that information sharing in PM does not positively contribute to a lower level of conflict emergence, this group process does not have to be in the centre of attention. This situation is reversed in an asymmetrical power-relations setting. Here, where dependency is unequally distributed, rather an increase in transparency through information sharing is effective while joint action of the partners do not aid in mitigating conflict.

Thus, managers should be aware of the fact that, first, their focus should be on proactive rather than reactive measures and second, that when taking measures, these have to be chosen depending on the contextual situation they find themselves in.

#### **4.6. Limitations and further research**

In sum, this article provides sound results regarding approaches for conflict prevention in horizontal alliances. However, the qualification of our conclusions necessitates an acknowledgement of limitations inherent in this study.

First, the data for our study was collected in Germany. While our conceptual framework and the hypotheses development is not based on cultural aspects, and thus, should be universal, we cannot rule out that firms in alliances in other cultural regions may behave and react somewhat differently to conflict prevention approaches. Therefore, research on this top-

ic should be replicated in other culturally different regions to confirm the generalizability of our findings.

Second, our study focus was on horizontal alliances. However, compared to vertical alliances, the mode of collaboration in horizontal alliances can be expected to be different due to their idiosyncrasies such as co-opetition (Wilhelm 2011) or their often multilateral set-up (Schmoltzi and Wallenburg 2011). Co-opetition implies the fear of opportunistic behavior as alliance partners are direct competitors outside of the alliance (Wilhelm 2011). Thus, the level of collaboration in group processes, and hence, their effectiveness in reducing the potential for conflict manifestation will be different than in a vertical alliance setting. The second feature common for most horizontal alliances, multilateralism (Schmoltzi and Wallenburg 2011), complicates the usage of group processes as more than two companies are to be included. Thus, due to the more straightforward arrangement of a buyer-supplier relationship in a vertical alliance, the effectiveness of the different group processes may be more pronounced. In order to examine potential differences in the effectiveness of group processes in reducing conflict manifestation, we encourage the replication of our study for vertical alliances.

Third, we limit our consideration on group processes in PM. Although PM has been identified as one of the most central areas in a business environment (Bititci et al. 1997), we also suggest to test the two group processes joint action and information sharing in other processes that are central to an alliance. This can be with a focus on the potential of group processes in other central alliance areas to reduce conflict manifestation, or by changing the focus via putting group processes in relation to other outcome variables.

Last, aspects of PM also offer starting points for further research. First, research until today lacks information with regard to how information technology (IT) supports the linkage



of PM across different companies in an alliance context. Do the companies make use of alliance-wide integrated IT-solutions or does every company conduct PM with a proprietary IT-system? Do they build on existing IT-systems or do they introduce new IT-systems? If a central alliance IT-systems for PM exists, how is it linked with the PM processes of the individual alliance partners? Second, research should also focus on the aspect what measures and metrics with respect to all relevant performance dimensions are suitable for an alliance context compared to intra-organizational PM. The question here is to what extent different measures are needed to cater for the specific needs of an alliance?

## **5 Conclusion**

Alliances play an increasingly important role in today's business environment (Bruner and Spekman 1998; Kale and Singh 2009). Against this background, the present dissertation closes research gaps by answering questions of how to effectively manage a horizontal alliance to ensure the effective functioning, and hence, reduce the risk of failure. Prior research has identified congruent goals, a minimization of opportunistic behavior, and the acknowledgment of conflicts as pre-requisites for an alliance to be successful (Childe 1998; Jagdev and Thoben 2001; Lehtinen and Ahola 2010). With this in mind, this dissertation puts alliance PM into the center of consideration since PM constitutes an elementary function of each individual company and alliance alike (Bititci et al. 1997).

Therefore, after chapter 1, which provides an introduction to the topic, chapter 2 examines the potential of two mutuality components — partner involvement and information sharing in PM — in establishing goal congruence among alliance partners, as well as its effect on alliance performance. Subsequently, in chapter 3, joint action in PM is used to operationalize one form of relational governance, which is then complemented by the formal control mechanisms of process and output control to examine their interplay for reducing partner opportunism and increasing alliance performance. Finally, chapter 4 analyzes the potential of group processes in PM to preventively work against the emergence of conflicts with respect to the power structure inherent in the alliance. The findings of this dissertation are provided in this aggregate fifth section.

## **5.1. Main research findings**

Chapter 2 provides results on the potential the two components of mutuality in PM, namely partner involvement in the PMP and information sharing of PM data, have on the establishment of congruent goals in a horizontal alliance setting. To allow for even more refined findings, partner involvement in the PMP was divided into two phases: 1) partner in-

volvement in the ex-ante phase of the PMP that includes partner integration in the PM process steps of metrics definition and target setting, and 2) partner involvement in the ex-post phase of the PMP that includes the integration of alliance partners during the PM process steps of operational measurement and the subsequent analysis of performance data. The results reveal that both mutuality components (i.e., partner involvement and information sharing) are important means to align goals. However, with respect to partner involvement in the PMP, a differentiation concerning the timing has to be made. A clear focus should be put on involving the alliance partners early in the PMP, while defining the metrics and setting the corresponding target values. This implies that for establishing congruent goals, alliance partners should jointly work on the conceptual phase of the PMP (i.e., ex-ante PMP) as at that time the partners establish a common understanding on aspects against which future action of the alliance are controlled. A later partner involvement in the PMP has been shown to have no effects on the establishment of congruent goals as at this point in time, the processes have already been established and therefore mutual actions do not contribute to an alignment of company specific alliance goals. The second component of mutuality — information sharing of PM data — also significantly contributes to a rapprochement of goals. The exchange of performance data establishes transparency about each partner's expectations, issues, as well as goals (Dekker 2004). This interactive process has been shown to lead to an alignment of viewpoints and corresponding goals respectively. Furthermore, this research provides evidence that congruent goals are vitally important for alliance success as they considerably influence the performance of horizontal alliances. This can be explained by the fact that congruent partner goals create unity of effort, thus enabling the alliance to exploit the strength of the individual partners by working along similar lines.

Chapter 3 revolves around the interplay of relational governance and formal control as both forms of governance have been found to be effective means in mitigating opportunism

(e.g., Heide et al. 2007; Ju et al. 2011; Schmoltzi and Wallenburg 2012). More, this chapter is concerned with the question if relational governance can be effectively complemented with formal control mechanisms to reduce opportunism. Relational governance in this context was operationalized by two types of joint action in the PMP: joint action in the ex-ante PMP and joint actions in the ex-post PMP. In the course of the research, these were complemented by the two formal control mechanisms of process control and output control. Chapter 3 reveals that when relational governance is used in isolation, only joint action in the ex-ante PMP is an effective means to reduce opportunistic behavior in the alliance, whereas joint action in the ex-post PMP does not show any effects. In combination with formal control mechanisms the results change considerably. If the relational governance mechanisms are complemented with process and output control, only a combination of the latter two mentioned with joint action in the ex-post PMP proves to be effective. To explain these results social contract theory was applied (Dunfee, et al. 1999; Heide et al. 2007). This theory suggests that activities within a relationship, in order to be effective, have to be legitimized via social contracts inherent in the alliance. Thus, the interplay of relational governance and formal control will only be effective if the inclusion of formal control methods is legitimized by implicit underlying agreements that have been developed beforehand and are perceived as fair and appropriate for the parties involved (Edwards and Karau 2007). In the specific setting described in chapter 3, joint action in the ex-post PMP establishes a shared understanding that it is fair to apply rather engaging, yet invasive control mechanisms such as process and output control. Thus, this interplay proves to be complementary, and hence effective in mitigating opportunistic behavior. In addition and in accordance with previous research, the research results reveal that opportunism is detrimental to the success of an alliance. However, this review of the relation was valuable in a sense that the negative effects of opportunism on alliance performance have now also been proven to be relevant in the special setting of horizontal alliances.

In chapter 4, this dissertation provides insights into the effectiveness of group processes in PM in preventing the manifestation of conflict potential into actual conflict. The two group processes joint action in PM and information sharing of PM data have been studied in the context of the power structure (i.e., symmetrical dependence-relation vs. asymmetrical dependence relation) inherent in the alliance. The results reveal that the effectiveness of the group processes applied varies depending on the power structure. The results further show that in a symmetrical power-relation, joint action in PM is most effective in preventing the manifestation of conflict, whereas in an asymmetrical power-relation, information sharing of PM data proves to be an effective means. Whereas previous research has mainly focused on post-manifestation topics such as conflict management techniques that are applied once conflict has already emerged (e.g., Amason 1996; Parry et al. 2008; Rahim 2002), this research shows that alliance partners can pro-actively work against the threat of conflict by applying group processes in PM. However, managers have to keep in mind in which context, with regard to the power structure they find themselves in.

In chapter 2 and chapter 3, partner involvement in the PMP and joint action in the PMP were divided in an ex-ante and an ex-post dimension, while in chapter 4, joint action in PM was considered as one holistic process. This differentiation has been made due to the following reasons. First, the potential of partner involvement in the PMP to develop congruent goals necessitates a separation of process steps as these steps (i.e., definition of metrics, target setting, measurement and evaluation) are too distinct (i.e., pre- vs. post-operational phase) to consider them with their effects on goal congruence in a holistic fashion. This would have blurred the results and would not have allowed for more detailed findings. A separation of the PMP steps is also required for chapter 3 as a holistic view of the PMP would not have allowed for more refined conclusions that were drawn by applying the social contract theory. Similar to the reasoning for chapter 2, also here, a separation of pre- vs. post-operational

PMPs is required because of the rather distinct components. In contrast, chapter 4 looks at PM from a holistic point of view instead of examining individual PMP steps for two reasons. First, PM is looked at on a superordinate level as the aim of the research was to consider strategic as well as operational PM issues. Thus, a focus on the PMP by differentiating it into its process components ex-ante and ex-post would only have catered for the latter one. Second, the main focus the research revolves around was put on examining the effectiveness of group processes in pro-actively preventing conflict with respect to the power structure (i.e., reciprocal dependency) inherent in the alliance as contextual factor. To cater for this, a differentiation into timely and operationally distinct process steps (i.e., ex-ante and ex-post) was not considered necessary.

The results of the three models tested in this dissertation provide several conclusions for the management of horizontal alliances. First, this dissertation strengthens the findings of Lehtinen and Ahola (2010), who, by means of a literature review, identified three decisive aspects that are of particular concern for alliance success, namely goal congruence, partner opportunism, and conflicts. This research was able to emphasize the importance of these aspects as all three, indeed, have been identified as success factors for alliance management. Their strong direct effect on alliance performance has been proven in chapters 2 and 3, where they have been shown to explain a very substantial part of the variance of this outcome variable.

Further, this research puts PM into the centre of attention. The importance of PM has already been stressed by Bititci et al. (1997) who stated that "performance management should be viewed as a key business process which is central to the future wellbeing and prosperity of any [...] enterprise" (p. 524). This dissertation shows that mutual actions in this cen-

tral alliance area can help to address the decisive aspects necessary for alliance success as pointed out by Lehtinen and Ahola (2010).

Third, this dissertation takes the idiosyncrasies of horizontal alliances into consideration when deriving interaction and effects of the constructs in focus, as their functioning is distinct from vertical alliances for which most of the present research has been conducted. In contrast to vertical alliances, horizontal alliances are often characterized by a multilateral set-up (Schmoltzi and Wallenburg 2011), lower interdependence as the output of one alliance partner mostly does not serve as an input for the other (Rindfleisch 2000), as well as co-opetition as a result of cooperating with (potential) competitors (Wilhelm 2011). In a services ambit, the latter characteristic adds even more complexity to alliance management as here, knowledge is of special importance (Steinicke et al. 2012). However, these companies only have few methods to protect their know-how from their partners, which makes the risk of opportunistic action and the use of the information outside of the alliance omnipresent (Steinicke et al. 2012). Against this background, the aspect of mutually conducting processes and exchanging information has been shown to be effective in addressing the negative effects resulting from the idiosyncrasies of horizontal alliances.

Overall, this research helps in confirming the findings of Lehtinen and Ahola (2010) in stating that diverging goals, partner opportunism, and conflict considerably influence the successful functioning of an alliance. Furthermore, besides providing practitioners with valuable insights into alliance management issues, it also creates a sound basis for further research.

## **5.2. Limitations and further research**

This dissertation contributes to alliance management research through various theoretical and managerial implications. Even though a considerable effort was undertaken to ensure



the rigor of the underlying methods, it does not come without limitations. Nevertheless, in combination with the findings, these open up diverse avenues for further research.

The particularities of the setting in which this research was conducted raise the question to what extent the results may be generalizable. First, this research is limited to horizontal alliances. Horizontal alliances are distinct from vertical alliances in that they are characterized by co-opetition (Wilhelm 2011), lower interdependency (Rindfleisch 2000), and a multi-lateral set-up (Schmoltzi and Wallenburg 2011). These three aspects are likely to considerably influence the functioning of the alliance compared to a vertical one. In order to test the validity of findings for other alliance set-ups, research testing the effects of mutual operations on the establishment of congruent goals, the reduction of opportunistic behavior, or the prevention of conflict should be conducted in a vertical setting such as of a supplier-buyer relationship.

Second, the data gathered to test the hypotheses of this research is limited to information provided by German companies. However, concepts such as opportunistic behavior or interpartner conflict are not independent from cultural aspects, which are likely to either intensify or weaken the effects. Therefore, even though our conceptual framework and the hypotheses developed are not based on these cultural aspects, I encourage the replication in other culturally different regions as it would be interesting to see if these results strengthen the validity of our results or disprove them.

Furthermore, similar to most research that study alliance relationships, this dissertation is based on single respondent data. As issues revolving around mutuality, meaning partner involvement and joint action are multilateral in nature, I encourage research that gathers information from a network perspective in which various viewpoints of different alliance partners are reflected.

In addition, this dissertation considers relationships among companies that develop over a period of time. The applied research design (i.e., web-based survey research), however, is based on a static examination. As the researched aspects of joint action, information exchange, goal congruence, opportunism, and conflict are dynamic aspects, a longitudinal study to track change over time would provide further interesting insights. The latter mentioned development can also be captured by qualitative case studies that are able to reflect the dynamic nature and interactions in alliance relationships. This qualitative research might build on the present findings of this dissertation and complement knowledge concerning the underlying processes that a quantitative study might not be capable of providing.

This dissertation was built on PM as its central concept. However, PM only constitutes one of the key processes that are of particular importance in alliance management. Thus, an alliance success or failure also depends on other alliance management processes that contribute to an efficient alliance functioning. One of them is the strategic decision making process, which shapes and sets the direction of an alliance, creating unity of effort. This dissertation showed that PM is one means to align goals among partners. However, it can be assumed that the alignment of goals does not only manifest itself in mutual actions in PM but also in the development of a common alliance strategy. Since aligned goals have been shown to be of special importance for being a major driver of alliance performance, the question arises how other processes such as the strategic decision making processes can contribute to goal alignment among the partners.

Last, the decision to engage in a mutual PM constitutes an important decision of the individual companies as it also involves opening themselves up and disclosing information to the partners. This is, especially in the co-opetitive setting of horizontal alliances, not without risk of opportunistic behavior. Therefore, further investigation on how companies in an alli-

ance make such a decision and what the underlying drivers or impediments are, is encouraged. This would most likely require a qualitative research approach.

In conclusion, even though this dissertation is able to close some gaps of alliance research, future research possibilities are still manifold. As alliances can be expected to further gain importance, research in this domain remains a promising area for theory and practice alike.

# Appendices

## Appendix 2.1

### Constructs and questionnaire scale items

Measurement Scales	Mean	SD
<b>Partner involvement in the ex-ante PMP*</b> <i>Cronbach's alpha = 0.93; Composite reliability = 0.92; AVE = 0.73</i>		
Ex-ante 1: We involve all key alliance partners in defining performance measures.	4.20	2.02
Ex-ante 2: All of our key alliance partners have a major influence on selecting performance measures.	4.04	2.01
Ex-ante 3: All key alliance partners are intensely involved in setting targets for decision-relevant metrics.	4.34	1.97
Ex-ante 4: All our key alliance partners have a strong influence on setting (performance) targets for decision-relevant (performance) metrics.	4.12	2.07
<b>Partner involvement in the ex-post PMP*</b> <i>Cronbach's alpha = 0.93; Composite reliability = 0.94; AVE = 0.81</i>		
Ex-post 1: We involve all key alliance partners in measuring the operational performance of the alliance.	4.59	2.06
Ex-post 2: All of our key alliance partners have a major part in the operational performance measurement of the alliance performance.	4.54	1.94
Ex-post 3: We involve all key alliance partners in analyzing the alliance performance results.	4.35	1.93
Ex-post 4: All of our key alliance partners have a major part in analyzing the alliance performance results.	4.23	1.93
<b>Information sharing in the PMP*</b> (Mohr and Spekman 1994) <i>Cronbach's alpha = 0.91; Composite reliability = 0.91; AVE = 0.71</i>		
IS 1: We share our results of the alliance performance measurement with our alliance partners.	4.29	2.17
IS 2: Our alliance partners share proprietary performance measurement results with us.	4.05	2.08
IS 3: We inform our alliance partners in advance of changing needs concerning the alliance performance measurement.	4.34	2.12
IS 4: In our alliance it is common that partners are informed concerning occurrences and changes with respect to performance measurement.	4.90	1.91
<i>The alliance partners keep us fully informed about performance measurement issues (e.g., goal deviations). (eliminated in scale refinement process)</i>		
<b>Goal congruence*</b> (Jap 1999) <i>Cronbach's alpha = 0.82; Composite reliability = 0.82; AVE = 0.61</i>		
GC 1: The alliance firms share the same goals in the relationship.	5.03	1.67
GC 2: The alliance firms have compatible goals.	5.39	1.49
GC 3: The alliance firms support each other's objectives.	4.59	1.77
<i>The alliance firms have different goals. (reverse coded) (eliminated in scale refinement process)</i>		

(continued)

\* Corresponding items are measured on a 7-point Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*

	Mean	SD
<b>Alliance performance*</b> (Mjoen and Tallman 1997)		
<i>Cronbach's alpha = 0.92; Composite reliability = 0.90; AVE = 0.69</i>		
Perf 1: We are satisfied with the performance of the alliance.	5.25	1.42
Perf 2: The alliance meets the objectives for which it was established.	4.99	1.51
Perf 3: The alliance is a profitable investment.	5.51	1.46
Perf 4: The alliance is an economic success.	5.40	1.55

Control variables	Mean	SD
<b>Relationship duration (Schreiner et al. 2009)</b>		
For how many years does this alliance exist?	11.41	8.89
<b>Reciprocal dependence (derived from Ganesan 1994)</b>		
	1.54	1.22
<b>Affective conflict*</b> (Amason 1996)		
<i>Cronbach's alpha = 0.86; Composite reliability = 0.86; AVE = 0.67</i>		
When taking joint decisions ...		
Affec. conflict 1: ... there is tension in the alliance decision making process	2.37	1.48
Affec. conflict 2: ... we and our alliance partners often come into conflict due to different personalities	2.42	1.44
Affec. conflict 3: ... personal dislikes transform objective discussions into emotional conflicts.	2.17	1.40
<i>... there often is disagreement in the alliance concerning the results. (eliminated in scale refinement process)</i>		
<b>Cognitive conflict*</b> (Amason 1996)		
<i>Cronbach's alpha = 0.91; Composite reliability = 0.90; AVE = 0.70</i>		
The alliance is characterized that we and our alliance partners ...		
Cogn. conflict 1: ... have often disagreements over questions of content	2.55	1.38
Cogn. conflict 2: ... have often to work through differences about the content of tasks	2.63	1.44
Cogn. conflict 3: ... have often differences in opinions	2.83	1.45
Cogn. conflict 4: ... have often different opinions concerning methods for problem resolution (new item)	2.97	1.47

(continued)

\* Corresponding items are measured on a 7-point Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*

	Mean	SD
<b>Opportunism*</b> (Delerue and Vidot 2006)		
<i>Cronbach's alpha = 0.84; Composite reliability = 0.84; AVE = 0.64</i>		
Oppor 1: Sometimes our alliance partners deviate slightly from agreements in order to achieve their interests.	3.83	1.76
Oppor 2: Our alliance partners have sometimes promised to do things without actually doing them later.	3.58	1.72
Oppor 3: Our alliance partners do anything within their means that will help further their firm's interests.	3.51	1.80
<i>Complete honesty does not pay when dealing with our partner. (eliminated in scale refinement process)</i>		
<i>Our partners carry out their duties even if we do not check up on them. (reversed coded) (eliminated in scale refinement process)</i>		
<b>Alliance size*</b> (de Celis and Lipinski 2007)		
	N	%
How many companies are engaged in the alliance?		
2	36	18
3-10	60	30
11-20	23	12
21-50	20	10
51-100	30	15
> 100	23	12
Not specified	5	3

## Appendix 2.2

### Demographics of responding managers

Job title of responding manager	N	%
Managing director / CEO	129	65
Managing partner	4	2
Member of the executive board	6	3
Business unit manager / senior executive	39	20
Assistant to the managing director	3	2
Not specified	16	8
<b>Total</b>	<b>197</b>	<b>100</b>

Working experience of responding manager	N	%
< 5 years	26	13
5-10 years	34	17
11-15 years	19	10
16-20 years	24	12
21-25 years	26	13
> 25 years	59	30
Not specified	9	5
<b>Total</b>	<b>197</b>	<b>100</b>

## Appendix 2.3

### Exploratory factor analysis

Items*	Inf.		Goal		Perform.
	Ex-ante	Ex-post	sharing	Congr.	
Ex-ante 1	<b>0.699</b>	0.037	0.247	0.128	0.121
Ex-ante 2	<b>0.793</b>	0.008	0.152	0.039	0.059
Ex-ante 3	<b>0.730</b>	0.177	0.055	0.120	0.055
Ex-ante 4	<b>0.883</b>	0.040	0.071	0.115	0.017
Ex-post 1	0.089	<b>0.838</b>	0.154	0.055	0.029
Ex-post 2	0.106	<b>0.762</b>	0.014	0.065	0.154
Ex-post 3	0.057	<b>0.874</b>	0.004	0.079	0.069
Ex-post 4	0.185	<b>0.773</b>	0.086	0.120	0.016
IS 1	0.003	0.141	<b>0.860</b>	0.021	0.080
IS 2	0.015	0.053	<b>0.807</b>	0.120	0.011
IS 3	0.104	0.044	<b>0.830</b>	0.050	0.031
IS 4	0.043	0.012	<b>0.639</b>	0.003	0.199
GC 1	0.017	0.003	0.012	<b>0.771</b>	0.011
GC 2	0.117	0.015	0.009	<b>0.755</b>	0.082
GC 3	0.029	0.035	0.156	<b>0.641</b>	0.068
Perf 1	0.036	0.030	0.054	0.134	<b>0.792</b>
Perf 2	0.063	0.041	0.074	0.043	<b>0.811</b>
Perf 3	0.000	0.013	0.011	0.021	<b>0.909</b>
Perf 4	0.009	0.066	0.114	0.063	<b>0.834</b>
AVE	0.73	0.81	0.71	0.61	0.69
CR	0.92	0.94	0.91	0.82	0.90

\* Ex-ante = Partner involvement in the ex-ante PMP; Ex-post = Partner involvement in the ex-post PMP; IS = Information sharing; GC = Goal congruence; Perf = Alliance performance; AVE = Average variance extracted; CR = Composite reliability



## Appendix 2.4

### Comparison of AVE and squared correlations (Fornell-Larcker criterion)

	(1)	(2)	(3)	(4)	(5)
(1) Partner involvement in the ex-ante PMP	0.73				
(2) Partner involvement in the ex-post PMP	0.65	0.81			
(3) Information sharing	0.40	0.29	0.71		
(4) Goal congruence	0.26	0.19	0.21	0.61	
(5) Alliance performance	0.05	0.04	0.04	0.28	0.69

Values on the diagonal are estimates of average variance extracted (AVE) and values below the diagonal are the squared correlations between the constructs

## Appendix 2.5

### Structural equation model without and with controls

Parameter	Model A: Structural equation model <u>without</u> controls		Model B: Structural equation model <u>with</u> controls	
	Estimate	<i>p</i> -value	Estimate	<i>p</i> -value
Ex-ante → Goal congr. (H1)	0.311	0.045	0.332	0.034
Ex-post → Goal congr. (H2a)	0.089	0.500	0.071	0.584
Inf. sharing → Goal congr. (H3)	0.245	0.010	0.196	0.044
Goal congr. → Perform (H4)	0.655	0.001	0.467	0.001
Alliance size → Goal congr. (control)			-0.049	0.472
Rel. duration → Goal congr. (control)			-0.063	0.349
Rec. depend. → Goal congr. (control)			0.151	0.022
Opportunism → Perform (control)			-0.207	0.028
Affect. Conflict → Perform (control)			0.082	0.508
Cogn. Conflict → Perform (control)			-0.350	0.001
R <sup>2</sup> Goal congr.	33.0		32.4	
R <sup>2</sup> Perform	42.8		46.4	

Note: \*\*\* *p*-value < 0.001; \*\* *p*-value < 0.01; \* *p*-value < 0.10

Ex-ante = Involvement in ex-ante PMP; Ex-post = Involvement in ex-post PMP; Inf. sharing = Information sharing; Goal congr. = Goal congruence; Perform = Alliance performance; Rel. duration = Relationship duration; Rec. depend. = Reciprocal dependency; Affect. Conflict = Affective Conflict; Cogn. Conflict = Cognitive Conflict

## Appendix 3.1

### Constructs and questionnaire scale items

Measurement scales	Mean	SD
<b>Joint action in the ex-ante PMP*</b>		
<i>Cronbach's alpha = 0.93; Composite reliability = 0.93; AVE = 0.77</i>		
ExAnte 1: We involve all key alliance partners in defining performance measures.	4.20	2.02
ExAnte 2: All of our key alliance partners have a major influence on selecting performance measures.	4.04	2.01
ExAnte 3: All key alliance partners are intensely involved in setting targets for decision-relevant metrics.	4.34	1.97
ExAnte 4: All our key alliance partners have a strong influence on setting (performance) targets for decision-relevant (performance) metrics.	4.12	2.07
<b>Joint action in the ex-post PMP*</b>		
<i>Cronbach's alpha = 0.93; Composite reliability = 0.93; AVE = 0.78</i>		
ExPost 1: We involve all key alliance partners in measuring the operational performance of the alliance.	4.59	2.06
ExPost 2: All of our key alliance partners have a major part in the operational performance measurement of the alliance performance.	4.54	1.93
ExPost 3: We involve all key alliance partners in analyzing the alliance performance results.	4.35	1.93
ExPost 4: All of our key alliance partners have a major part in analyzing the alliance performance results.	4.23	1.93
<b>Output control*</b> (Jaworski et al. 1993)		
<i>Cronbach's alpha = 0.85; Composite reliability = 0.86; AVE = 0.60</i>		
OutCon 1: The alliance partners have established clear goals for this alliance.	4.75	1.86
OutCon 2: Our alliance partners monitor the extent to which our company attains its agreed upon performance goals.	4.16	1.93
OutCon 3: If our performance goals were not met, we would have to explain ourselves to the alliance partners.	3.76	2.06
OutCon 4: We receive feedback from our alliance partners based on the extent to which we achieve our goals.	3.56	1.95
<i>The distribution of alliance gains among the alliance members is based upon the accomplishment of pre-defined goals. (eliminated in scale refinement process)</i>		
<b>Process control*</b> (Jaworski et al. 1993)		
<i>Cronbach's alpha = 0.85; Composite reliability = 0.85; AVE = 0.66</i>		
ProCon 1: Our alliance partners monitor the extent to which we follow established procedures.	4.56	1.91
ProCon 2: Our alliance partners evaluate the procedures we use to accomplish our alliance goals.	3.98	1.95
ProCon 3: Our alliance partners give advice on improving our procedures when established goals are not achieved.	3.82	1.95
<i>Our alliance partners give us feedback based on the extent to which we accomplish our performance goals. (eliminated in scale refinement process)</i>		

(continued)

\* Corresponding items are measured on a 7-point Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*

	Mean	SD
<b>Opportunism*</b> (Delerue and Vidot 2006)		
<i>Cronbach's alpha = 0.83; Composite reliability = 0.84; AVE = 0.64</i>		
Oppor 1: Sometimes our alliance partners deviate slightly from agreements in order to achieve their interests.	3.83	1.76
Oppor 2: Our alliance partners have sometimes promised to do things without actually doing them later.	3.58	1.72
Oppor 3: Our alliance partners do anything within their means that will help further their firm's interests.	3.51	1.80
<i>Complete honesty does not pay when dealing with our partner. (eliminated in scale refinement process)</i>		
<i>Our partners carry out their duties even if we do not check up on them. (reversed coded) (eliminated in scale refinement process)</i>		
<b>Alliance performance*</b> (Mjoen and Tallman 1997)		
<i>Cronbach's alpha = 0.92; Composite reliability = 0.93; AVE = 0.76</i>		
Perform 1: We are satisfied with the performance of the alliance.	5.25	1.42
Perform 2: The alliance meets the objectives for which it was established.	4.99	1.51
Perform 3: The alliance is a profitable investment.	5.51	1.46
Perform 4: The alliance is an economic success.	5.40	1.55

\* Corresponding items are measured on a 7-point Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*

## Appendix 3.2

### Demographics of responding managers

Job title of responding manager	N	%
Managing director / CEO	129	65
Managing partner	4	2
Member of the executive board	6	3
Business unit manager / senior executive	39	20
Assistant to the managing director	3	2
Not specified	16	8
Total	197	100

Working experience of responding manager	N	%
< 5 years	26	13
5-10 years	34	17
11-15 years	19	10
16-20 years	24	12
21-25 years	26	13
> 25 years	59	30
Not specified	9	5
Total	197	100

## Appendix 4.1

### Constructs and questionnaire scale items

Measurement scales	Mean	SD
<b>Joint actions in PM*</b> (Bonner et al. 2005)		
<i>Cronbach's alpha = 0.87; Composite reliability = 0.86; AVE = 0.61</i>		
Joint action 1: Our performance measurement activities across the alliance are well coordinated	4.46	1.86
Joint action 2: We systematically coordinate our performance measurement strategies with our alliance partners	4.12	1.91
Joint action 3: We have processes to systematically transfer performance measurement knowledge across alliance partners	4.63	1.75
Joint action 4: Managers from different alliance members meet periodically to examine how we can create synergies with respect to performance measurement across our alliances	4.44	1.80
<b>Information sharing in PM*</b> (Mohr and Spekman 1994)		
<i>Cronbach's alpha = 0.92; Composite reliability = 0.91; AVE = 0.73</i>		
Inf. sharing 1: We share our results of the alliance performance measurement with our alliance partners.	4.31	2.16
Inf. sharing 2: Our alliance partners share proprietary performance measurement results with us.	4.10	2.06
Inf. sharing 3: We inform our alliance partners in advance of changing needs concerning the alliance performance measurement.	4.35	2.11
Inf. sharing 4: In our alliance it is common that partners are informed concerning occurrences and changes with respect to performance measurement.	4.89	1.93
<i>The alliance partners keep us fully informed about performance measurement issues (e.g., goal deviations). (eliminated in scale refinement process)</i>		
<b>Affective conflict*</b> (Amason 1996)		
<i>Cronbach's alpha = 0.86; Composite reliability = 0.86; AVE = 0.68</i>		
When taking joint decisions ...		
Affec. conflict 1: ... there is tension in the alliance decision making process.	2.35	1.45
Affec. conflict 2: ... we and our alliance partners often come into conflict due to different personalities.	2.41	1.40
Affec. conflict 3: ... personal dislikes transform objective discussions into emotional conflicts.	2.13	1.32
<i>... there often is disagreement in the alliance concerning the results. (eliminated in scale refinement process)</i>		
<b>Cognitive conflict*</b> (Amason 1996)		
<i>Cronbach's alpha = 0.92; Composite reliability = 0.91; AVE = 0.72</i>		
The alliance is characterized that we and our alliance partners ...		
Cogn. conflict 1: ... have often disagreements over questions of content.	2.57	1.37
Cogn. conflict 2: ... have often to work through differences about the content of tasks.	2.66	1.45
Cogn. conflict 3: ... have often differences in opinions.	2.81	1.41
Cogn. conflict 4: ... have often different opinions concerning methods for problem resolution. (new item)	2.97	1.44

(continued)

\* Corresponding items are measured on a 7-point Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*

<b>Continuation of measurement scales</b>	<b>Mean</b>	<b>SD</b>
<b>Dependence of focal firm on alliance* (Ganesan 1994)</b>		
<i>Cronbach's alpha = 0.90</i>		
If our relationship was discontinued with this alliance, we would have difficulty in keeping up our current business.	4.32	2.25
This alliance is crucial to our future performance.	5.30	1.58
We are dependent on this alliance.	3.42	2.02
This alliance is essential to round out our service offering.	4.17	2.09
If our relationship was discontinued, we would have difficulty in replacing this alliance.	4.39	2.00
<b>Dependence of alliance on focal firm* (Ganesan 1994)</b>		
<i>Cronbach's alpha = 0.88</i>		
We are important to this alliance.	5.39	1.55
We play a major role in contributing to the success of this alliance.	5.26	1.54
If we discontinued being a member of this alliance, this alliance would have difficulty in keeping up business.	4.43	2.08
We are difficult to replace in this alliance. (new item)	4.34	2.02
<b>Control variables</b>		
<b>Relationship duration (Schreiner et al. 2009)</b>		
For how many years does this alliance exist?	11.44	8.96
<b>Alliance size* (de Celis and Lipinski 2007)</b>		
How many companies are engaged in the alliance?		
2	35	18
3-10	60	31
11-20	23	12
21-50	19	10
51-100	29	15
> 100	23	12
Not specified	4	2

\* Corresponding items are measured on a 7-point Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*

## Appendix 4.2

### Demographics of Responding Managers

<b>Job title of responding manager</b>	<b>N</b>	<b>%</b>
Managing director / CEO	127	66
Managing partner	2	1
Member of the executive board	6	3
Business unit manager / senior executive	39	20
Assistant to the managing director	3	2
Not specified	16	8
<b>Total</b>	<b>193</b>	<b>100</b>

<b>Working experience of responding manager</b>	<b>N</b>	<b>%</b>
< 5 years	26	13
5-10 years	33	17
11-15 years	18	9
16-20 years	24	12
21-25 years	26	14
> 25 years	57	30
Not specified	9	5
<b>Total</b>	<b>193</b>	<b>100</b>

## Appendix 4.3

### Exploratory factor analysis

Items*	Joint action	Inf. sharing	Affec. conflict	Cogn. conflict
Joint action 1	<b>0.825</b>	0.058	0.082	-0.006
Joint action 2	<b>0.819</b>	0.135	0.121	-0.003
Joint action 3	<b>0.862</b>	0.008	-0.102	0.076
Joint action 4	<b>0.849</b>	-0.110	-0.033	-0.033
Inf. sharing 1	-0.023	<b>0.961</b>	0.071	0.025
Inf. sharing 2	-0.046	<b>0.959</b>	0.028	-0.008
Inf. sharing 3	0.043	<b>0.852</b>	-0.074	-0.023
Inf. sharing 4	0.109	<b>0.723</b>	-0.112	-0.027
Affec. conflict 1	-0.120	0.082	<b>0.618</b>	0.326
Affec. conflict 2	0.056	0.020	<b>0.948</b>	-0.011
Affec. conflict 3	0.034	-0.086	<b>0.925</b>	-0.071
Cogn. conflict 1	0.037	-0.039	0.081	<b>0.833</b>
Cogn. conflict 2	-0.088	0.030	-0.001	<b>0.875</b>
Cogn. conflict 3	0.040	-0.045	-0.071	<b>0.963</b>
Cogn. conflict 4	0.049	0.017	-0.046	<b>0.933</b>
AVE	0.61	0.73	0.68	0.72
CR	0.86	0.91	0.86	0.91

Standardized factor loadings, average variance extracted, and composite reliabilities of the latent variables.

\* Joint action = Joint action in PM; Inf. sharing = Information sharing in PM; Affec. conflict = Affective conflict; Cogn. conflict = Cognitive conflict

## Appendix 4.4

### Comparison of AVE and squared correlations (Fornell-Larcker criterion)

	(1)	(2)	(3)	(4)
(1) Joint action in PM	0.61			
(2) Information sharing in PM	0.43	0.73		
(3) Affective conflict	0.07	0.06	0.68	
(4) Cognitive conflict	0.12	0.06	0.55	0.72

Values on the diagonal are estimates of average variance extracted (AVE) and values below the diagonal are the squared correlations between the constructs

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