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Universitat Autònoma de Barcelona

Department of Business

Doctorate in Entrepreneurship and Management

Doctoral Dissertation

Strategic Alliances Process and Performance: A meta-analytic study

Presented by:

Iryna Barodzich

Supervised by:

Dr. Carlos Gualarte

Dr. África Ariño

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SUMMARY

Determinants of alliance success remain the focus of researchers' interest as much today as they did thirty years ago. However, at this time, the focus of research has shifted from predominantly studying alliance's design and structural conditions to including the collaborative process in the analysis. Specifically, the way the collaborative process is conceptualized, its role in alliance governance and success, and its relationships with alliance design and other structural factors.

Despite extensive research, current understanding of a number of questions remains unclear. One problem is the lack of attention to how informal relational governance occurs / acts through formal and informal activities unfolding between partners as the alliance moves forward. Out of the wide range of process characteristics, researchers have mainly focused on trust and its capacity to serve as a governance instrument. Researchers have not yet exploited the fact that governance is based on a number of mechanisms – i.e. coordination, control/monitoring, motivation/ incentives – all of which cannot be embodied by any single individual characteristic of the process, even by trust. To deepen the understanding of this question it is necessary to develop such a conceptual framework for collaborative process, that on one hand will describe developmental stages of the process, while on the other hand, will account for the process characteristics observed by researchers and experienced by partners. Elements of such a conceptual framework could then be analyzed with respect to their capacity to facilitate governance. This topic was studied in the third chapter.

Similarities between the forces that drive the emergence and evolution of relationships between partners in an alliance and between members of communities of practice have been established. We relied on the description of formal and informal alliance processes from the relational perspective on alliances, and on the conceptualization of the developmental stages of practice from the community of practice perspective, to describe the domains of activities in which partners engage while performing their tasks. Furthermore, we assigned the process characteristics frequently employed in the alliance research to one of these domains and developed hypotheses about the relationships between these characteristics. Moreover, the governance functions of distinct activity domains have been discussed.

Another problem that has not yet been completely understood is the role of alliance social structure characteristics in the alliance success. Divergent empirical findings with respect to the influence of national cultural distance and prior mutual alliance experience – the two most widely studied characteristics of alliance social structure – on alliance performance continue to puzzle researchers. Although prior meta-analytical studies have established the absence of or the very weak effect of

some alliance social structural characteristics (i.e. national cultural distance) on its performance, they neither explored the reasons behind these counterintuitive findings, nor did they meta-analyze the effects of other social structural characteristics. To understand how and under which conditions alliance social structural characteristics affect its performance, it is useful to look at how these characteristics affect the ability of partners to establish relationships conducive (or not) to alliance success. This issue has been addressed in the fourth chapter.

With recourse to the concept of norm, points of connection between the institutional logics and the social exchange perspectives were established. This made it possible to derive hypotheses about the role of the developmental characteristics of interpartner relationships in transmitting the effect of social structure on performance. The existence of relationships between alliance social structural characteristics and the most frequently studied developmental characteristics of interpartner relationships as well as the role of the latter in transferring the effect of social structure on performance has been meta-analytically explored. Furthermore, the role of varying conceptualization and the measurement of the constructs among other possible moderating conditions has also been considered.

Yet another important underexplored question is related to the role of prior experience on alliance success. Empirical findings on this question were conflicting. Furthermore, previous research did not distinguish systematically whether the content of prior experience matters for alliance performance, learning, and partners' ability to build high quality relationships conducive to alliance success. These problems have been dealt with in the fifth chapter. We performed a meta-analysis in order to reconcile previous inconclusive empirical findings and to systematically explore the implications of differences in the content of prior experience for alliance process, learning, and performance.

Several points for further research were identified. The most obvious was an empirical validation of the suggested models on the data derived from a single sample rather than from various samples. Meta-analysis is a secondary analysis that allows for exploring the newly proposed relationships and models that had not been tested before. However, it does not substitute primary empirical validation. Next, the feasibility of the models was explored using factors that were the most frequently studied in the primary empirical research. Less frequently studied factors could not be included in the meta-analysis. The proposed activity domains describing interactions between partners can guide both the choice of other characteristics of relationships to be included in analysis and the development of hypotheses about the relationships between them as well as help in understanding their role in the alliance informal relational governance. The same is true for social

structure characteristics. Moreover, guided by a conceptual understanding of these categories, researchers can draw from general organizational theory to identify additional relevant factors and/or dimensions of currently employed factors that have not yet been studied.

The evolutionary character of the alliance process and governance could not be captured by the performed analysis. At different points of the alliance lifecycle the importance and/or role of different factors in alliance governance and performance may change. It is worthwhile to understand these possible changes, their consequences, and the factors determining whether these consequences will be positive or negative.

Furthermore, it was not possible to evaluate the generalizability of current empirical findings for all the relationships described by the models. Despite the fact that the number of moderating factors has been identified, the estimates of population correlations describing some relationships continue to be heterogeneous. This points to the possible presence of other moderating conditions. Additionally, some relationships have not been thoroughly studied or have not been studied at all. It is necessary to deal with these blind spots in future research.

The aim of this dissertation was to advance the research on and facilitate the practice of the governance of strategic alliances. As it was explained in the second chapter, systematic quantitative analysis of empirical findings from individual studies allows for better estimates of true population correlations and establishing the extent of the generalizability of the current empirical results. It is therefore helpful to analyze the current state of research objectively and suggest how it can regain force by identifying useful directions for further research. The broad theory-based frameworks which have been proposed, unify fragmented theoretical and empirical contributions, and therefore this analysis will help to understand the high-level implications of the accumulated body of research better. The research conducted in this dissertation will also be useful to practitioners by rendering elements of informal relational governance more comprehensible, and by suggesting which areas of alliances process and performance can be affected by social structural characteristics as well as by suggesting how different types of prior experience contribute to an alliance.

CHAPTER 1. INTRODUCTION

1.1. GENERAL PROBLEM STATEMENT AND RESEARCH TOPICS

Both the business and research community are concerned with the difficulties associated with the management of collaborative process in alliances. Until recently researchers mostly studied how to structure alliances for better learning and performance, and dedicated less attention to governance of the alliance process and to understanding how it is related to alliance structural characteristics and performance. Currently, it is widely acknowledged that structural solutions alone – e.g. partner selection, contractual and non-contractual restraints, structural designs to balance dependence between partners – are not sufficient to enable partners to create and to appropriate the value generated through their collaboration. Thus, it is worth exploring how process-related factors can help. We deal with three research topics in this dissertation:

1. Alliance process and its role in informal relational governance.
2. The effect of alliance social structure on performance and the mediating role of alliance processes.
3. The effect of alliance-related experience on learning and performance and the mediating role of alliance processes.

1.2. GENERAL OBJECTIVES

Below we state three general research objectives pursued in this dissertation. Objectives specific to each research topic are described in Chapters 3, 4 and 5.

The first objective is to develop a theory-based categorization of process-related factors and a conceptual model of the alliance process. Specifically, we will identify various domains of activities of the alliance process and the relationships between them. Additionally, we will describe the implications of the suggested model for relational governance in alliances.

The second objective is to conduct a systematic analysis of the relationships between some of the factors describing alliance structure, process, and performance in order to offer more precise estimates of the true population correlations between the variables of interest, to reconcile conflicting empirical findings, and to detect possible moderating variables.

The third objective is to explore the feasibility of the proposed process model as well as verify whether process-related factors may mediate the effects of structural factors on learning and performance. More specifically, we will focus on the mediation in relationships of: a) social structural factors with performance and b) alliance-related experience with learning and performance.

1.3. STRUCTURE AND CONTENTS

This dissertation is divided into five chapters. *The first chapter* is the introduction, which establishes general problems, the objectives, and links between research topics. *The second chapter* is related to the method of meta-analysis, which is the research method used in this dissertation. It starts from the description of rationales for conducting meta-analysis. Next, we describe the previously conducted meta-analysis on topics that overlap with the topics of this dissertation and how our meta-analyses are different from them. Thereafter, meta-analytic procedures are explained. The final section of this chapter describes how a meta-analytic database used in the present dissertation was created. *The third chapter* deals with the first research topic “Collaborative process and relational governance”. First, we introduce notions of the process and relational governance, and how they are used in management studies. Then, we review the literature in the alliance field on the process and relational governance, and establish research problems and objectives. Next, we explain how these objectives can be reached by applying a new framework – the communities of practice – and propose a model for an alliance process. Governance functions of elements constituting different activity domains of a process are discussed. Results of applying meta-analysis to explore the feasibility of this model are reported and discussed. *The fourth chapter* focuses on the social structural antecedents of alliance performance and the role of alliance processes in this relationship. First, we review prior empirical research on the role of social structure. Second, we state research problems and objectives. Third, we explain the theoretical framework used to achieve these objectives. Here we describe how strategic alliances can be conceptualized from Social Exchange and Institutional Logics perspectives, and we use the concept “norm” to explain the role of social characteristics of structure and process from these perspectives. It allows us to propose the model and formulate hypotheses. The results of applying meta-analysis to explore the feasibility of this model are reported and discussed. In *the fifth chapter* we compare the effects of different kinds of alliance-related experience on learning and performance as well as develop an understanding of the role some process-related factors play in these relationships. First, we introduce the idea that different types of prior alliance-related experience may be relevant for the success of the focal alliance in different extent, because only some kinds of knowledge previously gained can be

applicable/relevant in the new alliance context. Next, we review the prior literature on the role of experience and we describe problems, objectives and hypotheses. Results of meta-analysis are reported and discussed.

1.4. LINKS BETWEEN TOPICS

The central theme of this dissertation is alliance process. Each of three research topics contributes separately to better understanding of process and its role in alliance success.

In the first study (the first research topic) we rely on the idea that all process activities are threaded together by (the process of) learning to build and to maintain shared goals for an alliance. Learning and shared goals are *raison d'être* for being engaged in interactions directed on daily alliance operations. Learning and shared goals drive alliance survival and evolution. However, high failure rates and existence of general agreement that alliances are the most difficult to manage organizational form suggest that neither learning nor shared goals “happen” easily in strategic alliances.

Although scarce, existing models and case studies of alliance process demonstrate that partners rely heavily on socio-psychological processes to govern their daily interactions directed on alliance management. However, these models mainly focus on the way formal and informal processes are intertwined. Researches have not focus yet on how these informal processes act as governance mechanisms.

For the sake of justice it is worth mentioning that in the alliance field governance mechanisms have not got systematic attention either. The governance mechanism that has received most (if not entire) attention is control. Other governance mechanisms, such as coordination and motivation, are almost absent from the alliance research. One possible reason for this is that naturally organizations came to emphasize those formal governance mechanisms that allow them to react quickly. E.g., a partner can easily block any unwanted action of a counterpart if he has a majority equity position in an alliance. Obviously, it is easier to block unwanted action than to prevent it by encouraging the appropriate one through coordination and motivation. This emphasis on control had migrated from practice to the research on alliance formal governance, and from there to the research on informal relational governance. However, while in formal governance the decision to rely on one or another mechanism is done consciously/willingly, in informal relational governance all socio-psychological processes and associated governance functions are always “switched on”. Thus, it is worth to study all governance functions of informal processes. To fill this void we integrated some existing

process frameworks to offer the framework that describes relationships between different process-related factors and used it to analyse their governance functions.

After having developed better understanding of how socio-psychological processes happening within an alliance come to govern interactions between partners, we asked whether wider social context can influence them and the alliance performance. The understanding/perception of the way social interactions with a business partner should be, which partners acquired from their respective social contexts prior to entering the focal alliance, may determine the degree to which it is easy or difficult to manage an alliance. The social context can direct partners' actions and therefore, affect interpersonal interactions and related informal governance mechanisms. Thus, in the second study (the second research topic) we analysed how alliance performance is influenced by characteristics of alliance social structure and whether they also affect alliance process. Specifically, we studied the extent to which certain processes transfer the effect of social structure on performance.

Finally, in the third study (the third research topic) we compared effects of different types of alliance-related experience on learning and performance. Given the conflicting empirical findings on the effects of experience in alliances, and the generally recognized importance of learning about alliance management and about a partner, we compare the effects of different kinds of alliance-related experience that can lead to these types of learning on learning and on performance as well as explore the role of some process-related factors in these relationships.

CHAPTER 2. META-ANALYTIC METHOD

2.1. META-ANALYSIS IN RESEARCH ON STRATEGIC ALLIANCES

2.1.1. Meta-Analysis as a Research Tool

A meta-analysis is a research tool, which is used for two main purposes. Namely, reconciling conflicting empirical results and exploring feasibility of new conceptual models. First, a meta-analysis is the method that has been specifically designed to evaluate generalizability of empirical findings and to reconcile conflicting ones. Other quantitative methods do not allow it. Variability in empirical findings and conflicting results may be due to either work of statistical artifacts, e.g. sampling error and measurement error among others, or due to the work of moderating factors. A meta-analysis allows to account for various statistical artifacts and therefore provides more precise estimate of a correlation coefficient. Additionally, it shows whether the relationship in question is likely to be moderated. Second, a meta-analysis can be used as an explorative tool to test new hypothesis that have not yet been tested and therefore to explore the feasibility of new conceptual models. Moreover, a meta-analysis permits objectively evaluate the state of research by pointing at relationships missing from empirical research or that have not been researched enough and deficient research reporting practices. In the alliance field, researchers have used a meta-analysis for both purposes.

2.1.2. Comparison with Previous Meta-Analytical Studies

We are aware of four meta-analytical studies in the alliance field that analysed alliance structural and process-related characteristics and performance: Sobrero and Schrader (1998), Krishnan and Cunha (2005), Reus and Rottig (2009) and Li, Tian and Wan (2015). Below we provide brief overview of these studies and how they differ from ours. Detailed overview is provided in chapters 3 to 5.

Previous meta-analytical studies. Sobrero and Schrader (1998) analysed the influence on performance of contractual coordination (type, length, and specificity of legal agreements and distribution of information rights) and of procedural coordination (frequency, timing, directionality, and means of information exchange) as well as the influence of task characteristics (asset specificity and goals' and means' related uncertainty) on contractual and procedural coordination mechanisms. They cumulated p values in quantitative studies and analysed directionality in

qualitative ones. The total number of studies analysed is 32. The period for which studies were collected is January 1987 to April 1994. Sobrero and Scharader defined inter-organizational relationships for their analysis broadly. Along with strategic alliances they included relationships between manufacturers and independents sales representatives (e.g., Anderson and Weitz, 1989), between buyers and suppliers (e.g., Monteverde and Teece, 1982, Wanleker and Weber, 1984) as well as alliances formed by state-owned and not-profit organizations (Shan, 1991; Thomas and Klebe Trevino, 1993).

Krishnan and Cunha (2005) examined the influence of initial conditions (resource complementarity, prior alliances, national cultural distance), type of governance structure (contractual safeguards, equity distribution, interorganizational trust), and post-formation cooperative dynamics (information exchange, cooperation alliance age) on alliance performance in 78 quantitative studies with a total sample size of 15,201 alliances published over 1980 to 2004 period. They included in their analysis studies conducted on joint ventures and strategic alliances; however, it is not clear whether such interorganizational relationships as licencing agreements, distribution agreements, etc. were excluded or not.

Reus and Rottig (2009) examined the influence of cultural distance, hierarchical control, commitment and partner conflict on performance in international joint ventures. They analyzed 61 independent samples with a total sample size of 26,927 international joint ventures collected from studies published between 1997 and 2007.

Li, Tian and Wan (2015) analyzed the direct effect of contextual distance on performance as well as its indirect effect through knowledge exchange, knowledge diversity and knowledge creation. They have analyzed 46 empirical studies performed on Sino-foreign strategic alliances with a total sample size of 28,265 alliances published between 1990 and 2013.

We identified two core differences between above listed meta-analyses and meta-analyses we have conducted. Namely, relationships analyzed and a unit of analysis, which are described below.

Relationships analyzed. Previously conducted meta-analyses agree that both structural and relational dimensions as well as initial conditions influence outcomes of a collaborative relationship. However, since they focused on different problems underlying alliance performance, they analyzed different sets of relationships and models. Specifically, Reus and Rottig (2009) focused on the role of conflict in alliance performance. They analyzed antecedents of and remedies for conflict and their impact on alliance performance. Agency theory and so-called “behavioral”

perspective were used to explain the impact of hierarchical control and commitment on conflict and performance. The role of cultural distance received only empirical justification.

Krishnan and Cunha (2005) primarily focused on analysis of the contribution of three groups of factors – initial conditions, governance mechanisms, and post-formation dynamics – to alliance performance. They did not propose to test any theoretical framework unifying these groups. The variables included in the analysis were deliberately grouped based on their functions (e.g., governance) and on a stage in an alliance life cycle that they describe (e.g., initial conditions, post-formation dynamics) rather than according to theoretically derived categories. Nevertheless, they did analysed relationships between some of the variables composing these groups.

Sobrero and Schrader (1998) focused on the coordination problem arising in inter-organizational relationships, which they conceptualized as exchange of rights and information to enable the effective combination of agents, resources and functions. They proposed that given task characteristics, contractual and procedural coordination mechanisms influence performance. Their propositions are grounded in transaction cost, organizational learning and structural contingency theories.

Li, Tian and Wan (2015) focused on ambiguous influence of contextual distance on alliance performance. They looked at alliance performance from the perspective of knowledge creation and hypothesized direct and indirect effects of contextual distance on antecedents of knowledge creation, knowledge creation itself and on performance. Their conceptual model is empirically grounded.

We studied different set of problems. Our first research topic is the effect of alliance social structure on performance. We looked at alliance social structure and process through the prism of social norms and relied on the institutional logics and social exchange perspectives to articulate how differences in social norms underlying partners' behaviour affect alliance process and performance. Our second research topic is the content of alliance process itself. We relied on the communities of practice perspective to analyse the nature of activities performed by partners as alliance process unfolds and to develop propositions about relationships between different activities. Our third research topic is the effect of experience on alliance learning and performance. Based on organizational learning theory we compared the effects of different types of experience.

To summarize, research in the alliance field is characterized by the high degree of fragmentation due to the large number of theoretical perspectives applied and the broad array of variables used.

We have suggested theory-based frameworks to unify relationships between social structural factors, processes and performance as well as between different process constituting activities. Moreover, we tried to include as many variables relevant to our theoretical constructs as possible to see whether they reflect proposed theoretical mechanisms in a similar way, that is, whether they play the same role.

The unit of analysis. We defined broadly our unit of analysis and included both equity and contractual collaboration as well as domestic and international strategic alliances. While there is ongoing debate about what is an alliance, it was suggested that defining it broadly and analyzing whether relationships between variables of interest differ for different types of collaborative agreements might improve our understanding of what should be considered as an alliance and what should not be.

2.2. META-ANALYTIC PROCEDURES

Meta-analysis is a statistical research synthesis technique that allows to obtain estimates of the true strength of the relationship between two variables in a sampled population by aggregating results across studies on the same matter. We conducted random-effects meta-analyses following the guidelines offered by Hunter and Schmidt (2004). The main outputs of meta-analysis are the estimates of the true population correlation and its variance. With respect to the true population correlation one wants to know whether it is different from zero (i.e. whether the confidence interval around estimated true population correlation includes zero). The variance of estimated true population correlations allows us to account for variability in true population correlations due to unknown or difficult to capture factors as well as to assess whether the samples come from the same population or not.

2.2.1. True Population Correlation: Its Magnitude and Variance

Magnitude of true population correlation. The correlation found in an individual study is the estimate of the true population correlation. Its magnitude is different from the magnitude of the true population correlation due to various errors, which are also called statistical artifacts. Two types of errors that are always present in correlations coefficients calculated for variables in a sample are sampling error and measurement error.

Correction for sampling error. Sampling error is an unsystematic artifact that causes a correlation in an individual study to deviate randomly from true population correlation. Sampling error is

produced when a relationship or phenomenon of interest is studied in a randomly drawn sample rather than in the entire population of objects where the phenomenon of interest occurs. Although one cannot know the sampling error of a correlation in an individual study, by averaging correlations across studies it is possible to average out sampling error. Thus, the average correlation is the best estimate of the true population correlation. Averaging correlations weighted by sample size provides a better estimate of the true population correlation than a simple average since it assigns a higher weight to more precise studies. To the extent that the number of collected primary studies and total sample size increase, the impact of sampling error on the estimate of true effect size decreases. The confidence interval is used to judge whether the estimate is different from zero.

Correction for measurement error. According with the guidelines of Hunter and Schmidt (2004) we accounted for error of measurement in our meta-analysis using Cronbach's alpha coefficients to calculate the correction factor. Correction can be calculated for both independent and dependent variables as a square root of respective Cronbach's alpha coefficients. Correction for measurement error in independent and dependent variables is performed by dividing a correlation by respective correction factors. When possible, we implemented the individual correction procedure. When Cronbach's alpha coefficients were provided only for a few studies for an analyzed relationship, we used the artifact distribution approach for correction.

Variance of true population correlation. Variability in true population correlations (when correlations come from the same population) is due to unknown or difficult to capture factors like between-study differences in the way the studies were conducted, e.g., in their sample, design, methods, quality, etc. If the studies included in meta-analysis represent perfectly all possible studies (or all studies of interest), then a fixed-effects model can be applied. Otherwise, the random-effects model is recommended, which allows to account for between-study variability in true population correlations

In our case, it is unlikely that the factors that may impact the studied relationships are the same across all of the samples included in our study. Similarly, it is unlikely that studies that will be conducted in the future will be affected only by the same unknown factors that affected studies already conducted. Therefore we applied the random-effects model.

In random-effects models the assumption is that the true population correlation is represented by a range of values rather distributed with the variance σ_{ρ}^2 than by a single value. The width of a credibility interval¹ characterizes the actual dispersion of true population correlations around the mean true correlation. A 80% credibility interval for a correlation indicates that one can expect that in 80% of studies conducted (until now and in the future) true correlations will fall within that interval.

Applying a random-effects model when the number of studies is small provides an imprecise estimate of variability of the true mean correlation. No solution for this problem exists other than waiting for more studies to be conducted. However, taking into account that researchers intuitively tend to synthesize research findings as well as the fact that it is the commonly accepted opinion that meta-analysis is superior to such synthesis even if done with a small number of studies, the solution to that problem is to conduct meta-analysis and to explain clearly its limitations (Borenstein, Hedges, Higgins, and Rothstein, 2009).

Heterogeneity

The heterogeneity may be due either to various methodological and “real life” conditions that are difficult to capture (discussed above) or to substantive moderators (that is to theoretically important factors that can potentially deepen the understanding of the phenomena). In the latter case, the theory can be enhanced if those moderators and corresponding true population correlations can be found.

The correlations are regarded as heterogeneous if the variance in sampled correlations is larger than what can be expected from their sampling errors. There are three ways to assess heterogeneity in a relationship. Best practice (Borenstein et al., 2009; Geyskens, Krishnan, Steenkamp and Cunha, 2009) suggests that various tests of heterogeneity should be used simultaneously to gain a better understanding of the data. First, a wide credibility interval or one that includes zero might indicate the presence of substantive moderating variables (Hunter and Schmidt, 2004).

Second, low percent of variance accounted for by sampling error may indicate presence of real moderating variables. Percent of variance accounted for by sampling error is calculated as the ratio of sampling error variance to observed variance of correlations. There is no threshold for this test

¹ Credibility interval in Hunter and Schmidt (2004), or prediction interval in Borenstein et al. (2009). They are computed differently but the conceptual meaning is the same: it provides additional information about the variability of the mean true effect size.

that would indicate whether there are any real moderators or not, i.e. judgment about the presence of moderators is subjective. The larger the variation accounted for by sampling error, the smaller the variation due to possible methodological and substantive moderators. Hunter and Schmidt (2004) found that the 75% threshold rule works well in research on employment tests validity².

Third, a significant value of Q statistics of the chi-square test for heterogeneity may indicate heterogeneity. This test allows to estimate whether the variability of observed effect sizes from collected studies is different from what one would expect if all studies shared a common effect size (Borenstein et al. 2009).

2.2.2. Moderator Analysis

Moderator analysis shows whether the magnitude of a correlation between variables is context-specific. Two statistical methods to detect moderation effects are subgroup analysis and meta-regression.

First, subgroup analysis is appropriate for categorical moderators. It consists of grouping sampled correlations according to the values of a moderating variable and testing whether the mean correlations calculated for each group differ significantly. Following Hunter and Schmidt (1990), we made this estimation in the following way:

Critical ratio (Z score) $z = \frac{C}{\sqrt{Var(C)}}$, where $C = r_1 - r_2$ and $Var(C) = S_1^2 + S_2^2$, and r_i is the

mean group correlation, and S_i is the sampling error variance. A critical ratio exceeding 1.64 indicates a statistically significant difference between subgroups at the 10% level.

Second, meta-regression is used when a moderator is measured on a continuous scale. Weighted least squares regression analysis where sample sizes are used as weights (Hedges and Olkin, 1985). The sampled correlations are regressed on the value of a moderator. A significant beta-coefficient

² Borenstein et al. (2009) uses I^2 index to measure a proportion of the observed variance which is due to real differences between studies. Conceptually it is close to percent of variance accounted for by sampling error suggested by Hunter & Schmidt (2004). The distinction between them is that I^2 measure variance due to substantive factors instead of spurious. Smaller I^2 index indicates that variability is caused by sampling error and other spurious factors and not by substantive moderators. It was suggested to use 25%, 50% and 75% values of the I^2 index as approximate thresholds indicating low, medium and high heterogeneity correspondingly (Huedo-Madina, Sánchez-Meca, Marín-Martínez and Botella (2006)).

means that the magnitude of a correlation is associated with the magnitude of a moderating variable.

In practice, moderator analysis can be complicated by a small number of studies available for the analysis and by a large number of potential moderators. That is why the choice of substantive moderators should be justified theoretically to avoid any capitalization on chance or a confounding effect.

2.3. PROCESS OF CREATING META-ANALYTIC DATABASE FOR PRESENT RESEARCH

2.3.1 Literature Search

We searched both for published and unpublished research papers on alliance structural factors, process related ones, and performance. To collect published studies we searched four electronic databases: Business Source Complete, Springer Link, Science Direct, and Sage Journals Online. Our general purpose was to locate articles containing at least one of two substantive search-words – “strategic alliance/s” or “joint venture/s” – in the Subject, Title, Abstract or Key Words fields as well as the methodological search-word “correlation” in the text. Since we were interested in the entire set of variables describing alliance structure, process and performance we did not restrict our search by using any specific variable names. The end date of the search was July 2016. We took several additional steps to ensure completeness of our search: manually searched those issues of *Management International Review* and *Journal of International Business Studies* that are absent from electronic databases available to us and compared reference lists from other meta-analytic studies in the alliances field and identified articles that we did not select for our meta-analysis but that were included in other meta-analyses. To collect unpublished studies, we used mailing lists of relevant research communities. In a letter we asked researchers for assistance in locating both published and unpublished studies. This step did not yield additional studies.

2.3.2. Evaluation and Selection Process

Out of more than 2500 articles resulted from the search we retain only those articles that focus on actual business alliances as the unit of analysis rather than on alliance announcement, alliance portfolios, overall experience of a firm with alliances, buyer-supplier or licensing relationships, or industry - university partnerships. We also screened articles to retain only those that report on one

or more relationships between the constructs of interest: alliance social structural factors, interpersonal process-related factors, emergent states, and performance. Table 2-1 summarizes the variables on which we rely for our analysis which are those reported in existing empirical research³. According to these two screening criteria, 142 articles were suitable for our study. Moreover, we only included articles that reported correlation tables or regression coefficients of multiple regression or structural equation models. Where possible (only for two articles) we transformed regression coefficients into proxies for correlations following the procedure described in Peterson and Brown (2005). 2 out of 142 articles reported neither correlation nor regression coefficients.

Table 2-1. Definitions of the Variables Extracted From Collected Studies and Existing Measures

Variable	Existing measures
Individual partner experience	Experience in forming and managing alliances that a partner acquired before entering a focal alliance. It is typically measured as a number of alliances formed (Garcia-Canal et al., 2003; Zollo et al., 2002), number of years which a partner was involved with operating an alliance (Luo, 1997; Larimo), or a subjective evaluation of a level of experience on ordinal scale (Newbury et al., 2003; Simonin, 1997; Lunnan and Haugland, 2008; Lasserre, 1999)
Mutual experience	Number of previous alliances between partners (Zollo et al., 2002; Hoang and Rothaermel, 2005), years of previous cooperation between partners (Luo, 1997), or its product (Parkhe, 1993)
National cultural distance	Measure of the difference between countries of partners' origins usually measured as Kogut and Singh's index using Hofstede's dimensions (Barkema et al., 1997; Park and Ungson, 1997; Krishnan et al., 2006), and sometimes as a subjective evaluation of the divergence on ordinal scale (Luo, 2002; Simonin, 1999; Lasserre, 1999).
Operational control	Extent to which partners share participation in the alliance daily management. It was measured by operational control by one partner and shared operational control. <i>Unilateral operational control by one partner</i> Difference in partners ability to control in alliance measured as difference between actual levels of control exercised by partners in the process of collaboration (Luo, 2007; Child and Yan, 2003)

³ While we identified more variables belonging to each category, we could only include in this study those for which at least two relationships with a variable in another category was reported.

Table 2-1 continued

Variable	Existing measures
	<p><i>Shared operational control</i> Measures characterize the balance between the degree at which each of the partners takes part in a daily management of an alliance as well as a degree at what partners work towards accomplishing alliance goals (Luo, 2008; Robson, Katsikeas and Bella, 2008; Fang et al., 2008; Muthusamy, White and Carr, 2007, Pearce, 2001).</p>
Formalization	Extent at which partners are required to follow written specification of their obligations (Fang et al., 2008; Pearce, 2001).
Commitment	Measured characterize actions of partners toward each other. Measured on ordinal scale (Becerra, Lunnan and Huemer, 2008; Dong and Glaister, 2009; Morris and Cadogan, 2001; Muthusamy, White and Carr, 2007).
Transparency of information exchange	Measures describe such aspects collaborative process as frequency and quality of information exchanged between partners. Measured on ordinal scale (Tiwana, 2008; Jiang and Li, 2009; Krishnan et al., 2006; Lin and Germain, 1999).
Disagreements	Measure of frequency and strength of disagreements between partners happening in the process of collaboration typically measured on ordinal scale (Tsang et al. 2004; Luo, 2006; Sim and Ali, 1998).
Trust	Measure evaluates a level of trust feeling between partners (Luo, 2008; Nielsen and Nielsen, 2009; Kwon, 2008). “The expectation held by one firm that another will not exploit its vulnerabilities when faced with the opportunity to do so” (Krishnan et al., 2006).
Learning	Measure reflects a level of learning occurred in the process of collaboration (Lunnan and Haugland, 2008; Jiang and Li, 2009; Jiang and Li, 2008; Lee, Johnson and Grewal, 2008; Steensma et al., 2005).
Performance	<p><i>Multidimensional performance</i> Subjective evaluation of various dimensions of performance of an alliance (Lee, Johnson and Grewal, 2008; Kim and Parkhe, 2009; Zhan and Luo, 2008; Child, 2002).</p> <p><i>Overall performance</i> Subjective evaluation of overall success of an alliance (Ozorhon, Ardit, Dikmen and Birgonul, 2008; Lu, 2007; Simonin, 1997). It was usually measured on a 5 to 7 point Likert scale.</p> <p><i>Financial performance</i> Perceived financial performance of an alliance (Isobe et al., 2000; Jiang and Li, 2007; Pak, Ra and Park, 2009). It was usually measured on a 7 point Likert scale or through objective profitability indicators (Ramaswamy et. al.,1998; Lu and Xu, 2006; Luo, 2009).</p> <p><i>Goal achievement</i> Subjective evaluation of achievement of objectives (Child and Yan, 2003; Newburry and Zeira, 1999; Kwon, 2008). Usually measured on a 5 to 6 point Likert scale, or as a binary measure (Hoang and Rothaermel, 2005).</p>

2.3.3. Coding

To extract data on correlations, characteristics of the sample and the study, and classify the relationships reported in the articles we used a coding form developed specially for this purpose. The research team discussed and pre-tested it to ensure that all items were correctly understood. Articles were coded independently by two team members who were previously instructed about the meaning of every item in the coding form and about the essence of the constructs of interest. The inter-rater agreement coefficients for structure- and process-related factors were 0.88 and 0.93 correspondingly. According to the Landis and Koch (1977) criteria, a coefficient in the interval from 0.81 to 0.99 indicates almost perfect agreement. All disagreements were discussed until final agreement was reached.

2.3.4. Duplicated Effect Sizes

While coding articles we realized that some authors wrote more than one article using the same collected data. We followed the following inclusion rules. First, out of all research articles relying on the same collected data we included the article with the largest sample size. Nonetheless, if the excluded studies offered information about one or more relationships not reported in the chosen study, those relationships were collected also.

The final number of articles included in all our studies was 140 (see Appendix A), with a total sample size 24585 ranging from 153 to 7654 alliances per relationship. The number of studies (k) used to calculate the weighted average correlations in our meta-analysis ranges from 2 to 30 per relationship.

2.3.5. Possible Limitations of the Database

After the data collection process is finalized, the researcher can discover that it is not possible to construct complete correlation matrix that would include inter-correlations between all variables of interest, because such studies have not yet been conducted (or, the number of studies was less than two). It precludes the possibility to use regression analysis to explore the feasibility of the proposed model.

One possibility is to report only those relationships that allow to run regression analysis and exclude the rest of relationships. While deciding whether to sacrifice the scope and the number of

relations reported for the opportunity to run regression analyses we thought that the need to understand better inter-relationships between constructs of interest, and, thus, have chosen not to reduce number of relationships reported. Considering the absence of a unifying framework for multitude of theoretical approaches and concepts used in the strategic alliance field we decided to report meta-analyses of all relationships to suggest direction for future research, to highlight “blind points” and to facilitate discussion related to development of such a framework. One can have preliminary understanding of the strength and significance of relationships from correlation coefficients also. .

CHAPTER 3. COLLABORATIVE PROCESS AND RELATIONAL GOVERNANCE

3.1. PROBLEMS AND OBJECTIVES

Difficulties associated with the management of post-formative collaborative process in alliances concern both the business and research community (Ménard in Gibbons and Roberts, 2013). In this chapter we attempt to advance the current understanding of an alliance collaborative process as well as alliance informal governance. To do this we discuss the alliance process and its constituting elements from the perspective of the community of practice and analyze how informal governance instruments are embedded in it.

Despite the growing number of studies on alliance process, few conceptualizations of the process exist (Contractor, 2005). Currently, the majority of process-oriented empirical studies focus on a limited number of specific factors without elaborating on the overall model of the collaborative process. As a result, there is no clear understanding of the dimensions/domains of process-related activities, the relationships between them, their constituting factors, and how they help partners to establish and achieve shared goals.

Moreover, there is lack of attention to the link between the alliance process and alliance informal relational governance mechanisms. Although during the post-formative period alliance partners rely heavily on this type of governance, trust is the only governance instrument that has got a significant amount of attention. Other elements and characteristics of the collaborative process – such as joint decision-making, the extent of formalization, and the quality of information exchange among others – have received relatively less attention as relational governance instruments. A better understanding of process-related factors and their governance functions is necessary for advancing our understanding of the implementation of informal relational governance in alliances. In other words, we aim to answer the following question: “How can partners arrive at effective relational governance of the alliance process?”

Finally, previous empirical studies have generated conflicting results both with respect to the magnitude and to the direction (sign) of relationships between some process-related factors. To facilitate the application of research findings in practice and to determine fruitful directions for further research, it is necessary to verify the contexts to which these empirical findings are generalizable.

To summarize, no explicit attention was given to the question about the process through which partners can develop the understanding of their shared goals, the ways to implement them, and the role of informal relational governance instruments in this process.

Our general objective is to suggest a model for an alliance process and describe its implications for relational governance. It can be broken down into three specific objectives.

1. To describe the dimensions/domains of the alliance process and the relationships between them.
2. To use a meta-analysis to explore the feasibility of the suggested model of alliance process and to establish empirical generalizations about the relationships between the factors constituting the process.
3. To describe the governance functions of process-related factors.

To reach these objectives we integrated the perspective of the communities of practice (Wenger, 1998) with process frameworks existing in the alliance field. The community of practice perspective describes the processes leading to the emergence of shared goals and mechanisms for bridging differences between interacting parties. Thus, we started by outlining the current understanding of the alliance collaborative process and alliance relational governance. Then, we discuss the similarities and differences between alliances and communities of practice. Next, we developed hypotheses about the relationships between the dimensions/domains of process-related activities in alliances. Finally, we meta-analyzed these relationships and discuss the implications on the understanding of informal relational governance in alliances.

3.2. PRIOR RESEARCH ON ALLIANCE PROCESS AND RELATIONAL GOVERNANCE

3.2.1. Conceptualizations of Process in Management Research

Van de Ven (1992) identifies three broad definitions of process used in management research: (1) process as an explanation for variance theory; (2) process as a category of concepts; and (3) process as a developmental event sequence. The first meaning refers to a logic to explain the relationship between inputs and outcomes, and it is commonly used in variance studies; process is not directly observed but rather, it remains a “black box.” The second meaning refers to a category of concepts of individual and organizational actions that is distinguished from other categories of concepts such as environment, structure, and performance; process concepts are operationalized, and measured as fixed entities whose attributes vary along numerical scales. Finally, the third

definition refers to “a sequence of events or activities that (...) represents an underlying pattern of cognitive transitions by an entity in dealing with an issue” (Van de Ven, 1992: 170); the focus is on the “nature, sequence, and order of activities or events that an organizational entity undergoes as it changes over time” (Van de Ven, 1992: 172).

In the alliance field, cross-sectional studies often use process narratives as a way to link structural factors and performance (the first meaning of “process”). These explanations rarely have been tested empirically (Salk, 2005). Such studies cannot help to achieve neither of our objectives.

A few qualitative, in-depth case studies (Ring and Van de Ven, 1994; Doz, 1996; Ariño and de la Torre, 1998) have identified repetitive sequences of events or activities that knit alliance processes (the third meaning of “process”) (see de Rond and Bouchikhi, 2004). We relied on these studies to develop an understanding of process-related factors (and their categories) that enable partners to perform their tasks.

Quantitative approaches to alliance processes (the second meaning of “process”) do empirically test the role of process factors. They are the studies that can be used for meta-analysis. We relied on such studies to explore meta-analytically the relationships between different categories of process-related factors.

3.2.2. Alliance Process Research

The main focus of the alliance process research is the interactions between partners and their behavior in the course of day-to day alliance management (Contractor, 2005). Alliance process is often referred to as the series of actions and reactions that take place between partnering firms as the alliance moves forward (Lui and Ngo, 2005). While studying alliance process, researchers mainly focused on questions about its influence on alliance performance, whether this influence is stronger than that of alliance structure, and whether process substitutes or complements alliance structure (see e.g., Contractor, 2005), rather than on process alone. In quantitative empirical studies, researchers often use a small number of process-related variables to describe the entire collaborative process without addressing the fact that these factors may constitute different dimensions/domains of a process and may not be equivalent to each other.

In existing conceptual frameworks developed through longitudinal case studies (see Doz, 1996; Ariño and de la Torre, 1998; Ring and Van de Ven, 1994), process is conceptualized as a “developmental event sequence” (according to Van de Ven’s (1992) classification described in the

previous section). The research questions in these studies were related to the evolution of process and relationships rather than the understanding *how specific process-related activities are distinct and how they are related to each other*.

Below we review a framework for interorganizational cooperative process developed by P. Ring and A. Van de Ven (Ring in Beamish and Killing, 1997; Ring and Van de Ven, 1994). Ring and Van de Ven identify three stages of formal collaborative process – *negotiation*, *transactional (or commitment)*, and *administrative (or execution)*. Formal processes are a person's direct actions specified by their role responsibilities. The negotiation process is directed at the analysis of possibilities for the partnership, investments and uncertainties as well as at the development of the understanding of partners' joint motivation and differences in their preferences. Activities of the transactional (or commitment) process are directed at the formalization of reached agreements on the obligations and rules for future exchange, establishing formal (legal) contracts, and achieving congruency in "the initially different views of the potential purposes and expectations" (Ring and Van de Ven, 1994: 99). Finally, the administrative (or execution) stage includes activities directed at the management of a partnership and the execution of actions agreed upon previously as well as in monitoring whether commitments were executed efficiently and in an equitable manner. Although in the framework these stages are described separately for analytical purposes, in real life they occur nearly simultaneously (preserving the order) and do not happen only once in the alliance life. Unanticipated external events as well as misunderstandings and conflicts will require adjustment and will trigger new cycles of negotiation, commitments, and execution.

P. Ring (in Beamish and Killing, 1997) observed that the *effective realization of formal stages depends on informal processes*. Informal socially-designed mechanisms both guide reciprocal actions and are "continuously shaped and restructured by actions and symbolic interpretations of the parties involved" (Ring and Van de Ven, 1994: 96). That is, in order to successfully perform formal activities, partners have to rely on wide array of informal processes. Informal processes – sensemaking, understanding, and commitment – are social-psychological processes and are driven by different motives than that of formal transactions. Informal processes supplement the formal processes and may even come to substitute them. Through the informal process of *sense-making*, partners build the vision of their individual preferences in relation to the preferences of others and to the collective goals. Sensemaking occurs during the negotiation stage when partners clarify their own and their counterpart's purposes, values, and expectations for cooperation. The process of *understanding* is related to the construction of common, congruent (intersubjective) understandings among parties otherwise relying on their individual ways of knowing. In the process of understanding, partners will also seek confirmation of the expectations resulting from sense-

making activities. The process of *committing* is related to the creation and maintenance of a psychological contract. (Ring and Van de Ven, 1994). In the cumulative process of formal negotiation and commitment in incremental steps, partners reach congruence in their purposes and expectations for cooperation; informal processes of sensemaking and understanding will result in a psychological contract. A psychological contract is an unwritten and often not verbalized set of congruent expectations and assumptions about such issues as what each party will give and will receive in return, common norms, work roles, the nature of the work itself, social relationships, security needs, etc. Some aspects of that congruent understanding may become formalized in a legal relational contract.

Initially the understanding of identity, mission, and procedures of transactions is highly personal. Only particular individuals delegated by partner organizations who had participated directly in the development of that understanding are aware of it. With time, this can become institutionalized, i.e. become embedded in social relationships and evolve into participants' taken-for-granted expectations (Ring and Van de Ven, 1994: 102). Institutionalization reveals itself in the following processes: Partners start increasingly rely on personal relationships instead of role relationships, which makes psychological contracts more relevant to them than formal ones, and, as the duration of collaborative relationships exceeds the tenure of the agents, the psychological contract increasingly influences the formal contract's content and flexibility.

Nevertheless, the same processes which contribute to the emergence and evolution of cooperation may result in its termination. Specifically, the imbalance in the degree of reliance on formal versus informal processes increases the likelihood of termination. On one hand, as the alliance proceeds, interdependencies between parties increase and may lead to potential conflicts and competition. These potential conflicts are more aptly managed by personal ties and psychological contracts – since the latter allows flexibility – than by formal contracts and relationships. Excessive reliance on formal processes as reflected in a high level of formalization and monitoring will lead to conflicts between roles and personal interactions. On the other hand, excessive reliance on trust may create conditions for the violation of trust or lead to overcommitment to the chosen course of action and relationships.

3.2.3. Alliance Relational Governance

Relational governance in the alliance field is rooted in the relational contracting theory. According to this perspective, participants of relational exchanges are tied together by values internal to their relationship and are governed by relational norms in addition to wider social and economic factors

(Macneil, 1978, 1981). Alliances have been conceptualized as relational exchanges (Poppo and Zenger, 2002), which in addition to legal contracts enforced by third parties and self-enforced formal instruments (e.g. mutual hostages), are also governed by informal social contracts that emerge in inter-personal relations (Ness, 2009; Dyer and Singh, 1998). Such informal governance is rooted in common values, mutuality of interests between parties, the expectation for the continuity of the exchange (Dyer and Singh, 1998; Heide, 1994) and fills gaps in contracts that cannot be dealt with using formal governance instruments.

In prior empirical research in the alliance field, relational governance has been conceptualized mainly as trust. Although not to the same extent as trust, the following characteristics of relationships have also been discussed with respect to relational governance: participation, willingness to mutually adjust, flexibility, communication, and learning (Ring and Van de Ven, 1994; Doz, 1996; Ariño and de la Torre, 1998; Stephen and Coote, 2007). However, until now, the alliance process had not been analyzed through the prism of governance. *How governance mechanisms – i.e. coordination, control, motivation – are triggered as partners become engaged in various collaborative processes and what relationships exists between these triggers* had not been systematically analyzed in prior research. It should be mentioned that, curiously enough, these governance mechanisms are not clearly separated by researchers and frequently defined in terms of one another.

Existing conceptual frameworks for the alliance collaborative process (Ring and Van de Ven, 1994; Ariño and de la Torre, 1998) do not explicitly discuss the role of formal and informal process activities in relational governance because they have different objectives. For example, Ring and Van de Ven (1994) describe how informal social-psychological processes support formal activities at different stages of the alliance process. Ariño and de la Torre (1998) among other questions, focus on the role of partners' perception of equity in determining relational quality and the dynamics of the evolution and dissolution of alliances. Our understanding of informal relational governance in alliance process can be improved by developing a better understanding of the characteristics of partners' interactions, and informal relational governance mechanisms and the way they relate to each other.

Prior research has identified the following general mechanisms or functions of governance: control, motivation/incentives, and coordination/adaptation (Albers, 2010). Out of a wide range of theories used to study business alliances, only two explicitly refer to these governance mechanisms. They are transaction cost and transactional value theories. Below we summarize how they define these mechanisms and examples of activities that correspond to them in the context of alliances. It should

be taken into account that functions (i.e. motivation, coordination and control) of activities that we identified in the revised literature are not clearly separated from one another by previous researchers and sometimes overlapped.

Coordination as a governance mechanism aims at directing partners in their effort to combine their contributions and actions in a way that facilitates alliance long-term goal achievement as well as at enabling adaptation to changing circumstances (Heide, 1994). According to the transaction cost theory, relationships in which both partners undertook specific investments to realize cost economies were fundamentally transformed in a bilateral monopoly (Williamson, 1979). The paradox of a bilateral monopoly is that there is no objective rule corresponding to the principles of economic theory for determining the ratio at which actors should exchange their resources (Emerson, 1976). Williamson (1979) explains that when partners in an alliance become interlocked in this way, they cannot specify state-contingent adaptations in advance. He further emphasized that such relationships adapt not to the initial terms of the contract, but to the relationship itself (Williamson, 1979). Transaction cost and transactional value theories do not differ from each other with respect to this governance function in the context of alliances. Both of these theories agree that given that specific investments have occurred and that partners wish to continue to enjoy transaction-specific savings that they generate through collaboration, partners can enhance the adaptability of their relationships by developing a wide range of options describing how an alliance can proceed (Zajac and Olsen, 1993).

Coordination can be achieved through formal means such as decision rights (e.g., centralized, shared, split) and formal plans both for everyday work and for future responsibilities and contingencies (e.g., instructions). Informal coordination happens through shared identities. When partners have a shared social identity, they have similar priorities and therefore, use the same criteria to *decide*⁴ which behavior is appropriate. Shared (social) identities do not exist *a priori*, rather they should be developed apart from individual identities. Different cultures may differ greatly in respect to value hierarchies and criteria for appropriate behavior. However, sociologists and anthropologists agree that equity and reciprocity (Ring and Van de Ven, 1994; Ariño and de la Torre, 1998) are universal principles understood in all cultures (Emerson, 1976). These principles constitute the base for developing shared identities. This is not to say that partners feel obliged to behave consistently with these principles, rather that they (*a priori*) share the understanding of the conditions for applying the principles and the consequences of not following these rules.

⁴ The word “decide” is important here. That is, agreed upon instructions, plans, and informal shared understandings do not control partners’ behavior; rather, they specify which actions will be considered acceptable. Partners are free to decide not to follow them.

The governance function of *control/monitoring* is related to evaluating the individual performance and behavior of partners, and monitoring the extent to which they comply with the contract. The need for control arises due to a) knowledge dispersion, which is caused by a division of labor between partners in an alliance, and b) divergence of interests, which can arise when partners delegate the rights to manage assets they own. According to the transaction cost theory, transactions governed by relational contracts can/should rely on trust as a control mechanism. The transactional value theory refers more generally to institutionalized norms and shared goals as control instruments, which can safeguard from opportunistic behavior caused by the divergence of interests.

In practice, control/monitoring can happen in two ways. If partners can observe the output or behavior of each other, they can block unwanted behavior directly as soon as they observe it. Alternatively, control can be self-enforced (e.g., relation-specific institutionalized norms, culture) and be based on socialization process (i.e. accountability). Self-enforced control encourages desired behavior, rather than blocks unwanted ones.

Incentives are needed to make partners willing to behave in a certain way. According to the transaction cost theory, divergent interests of partners under conditions of incomplete contracting, uncertainty, and information asymmetry, require the use of incentive alignment mechanisms. Transaction cost and transactional value theories differ in their understanding of these mechanisms. In the transaction cost theory, incentives are the net profit accrued to a partner, which he will attempt to maximize by economizing on the costs of operations and using assets efficiently (Tadelis and Williamson, 2012). However, such focus on cost economizing implies that partners will have problems with the coordination/adaptation of their actions. That is, if unforeseen disturbances happen which require adaptation, a partner can either become reluctant to absorb the resulting additional costs and will require compensation for doing it, or may exhibit the rent-seeking behavior during re-negotiation (Tadelis and Williamson, 2012). The related problem is that it is not always possible to separate the stages of operations and determine objectively the exact amount of rents and costs corresponding to a particular partner. The transactional value theory focuses instead on the relational rents that partners cannot receive outside of the alliance. These rents motivate partners to preserve the stability and continuity of the alliance. According to the transactional value theory, whenever additional costs can be considered as relation-specific investments, they will not cause adaptation problems because relation-specific investments increase relational rents by reducing the difference between the potential and realized value of an alliance. In alliances, incentives or relational rents depend on partners' ability to identify synergies and establish fair allocation/distribution rules. Additionally, they can accrue rents in the form of

reputation both within and outside the relationship. Furthermore, partners may benefit from the increased status of the relationship itself, i.e. shifting from competitive to cooperative relationships, developing social bonds, the identification with an alliance, and trusting relationships (Heide, 1994).

3.3. PREVIOUS META-ANALYTICAL STUDIES

To the best of our knowledge, no meta-analytical studies that explicitly focus on relationships between factors describing the alliance process have been conducted yet. Krishnan and Cunha (2005) meta-analyzed relationships of interorganizational trust with information exchange and cooperation, but they did not conceive them as representing interrelated dimensions of the alliance process. Their results showed that trust is positively and significantly associated with information exchange and cooperation. Specifically, the mean corrected correlations for these relationships are $\bar{r}_c = 0.42$ and $\bar{r}_c = 0.39$ respectively.

Our study differs from the study conducted by Krishnan and Cunha (2005) in two respects. First, we suggest a theoretical framework, which allows us to categorize factors describing the alliance process and to establish the relationships between them. Krishnan and Cunha (2005) did not rely on any specific framework; they conceptualized trust as a governance instrument that affects a number of characteristics of alliance post-formation dynamics including information exchange and cooperation. Instead, we distinguish between the different factors that contribute to the alliance process based on the role they play in the relational governance of the collaborative process. As a result, we hypothesized a different set of relationships between the factors to describe the alliance process. Second, we summarized a larger number of empirical studies and more relationships, which allowed us to receive more precise results and a more complete picture of the alliance collaborative process.

3.4. THEORY AND HYPOTHESES

To achieve our objectives, we relied on the community of practice framework. We have chosen this framework because the community of practice research explicitly focuses on the informal processes directed at creating and sustaining a shared understanding of a project/goals by members of a community. Although in the alliance field it is recognized that the ability to achieve a shared understanding of goals is crucial for strategic alliances (Zajac and Olsen, 1993), this problem has not got due attention in existing process frameworks.

Interorganizational collaborations such as strategic alliances represent an environment which is conducive to the emergence of communities of practice (Koliba and Gajda, 2009). However, since the community of practice perspective is not specifically about a process of interorganizational collaboration, before proceeding with the elaboration of hypotheses, we explain how strategic alliances are similar to communities of practice. The emergence and the evolution of communities of practice depend on three processes – participation, reification, and learning – in which an entire community is engaged (Wenger, 1998). Therefore, in the following section we describe these processes and explain how they manifest themselves in alliances. Furthermore, Wenger (1998) conceptualized the activities of actors engaged in a community of practice as three interrelated domains: mutual engagement, joint enterprise, and shared repertoire. Thus, in the next section we describe these domains and integrate them with a process framework proposed by Ring and Van de Ven (1994). We propose how the different domains of process activities described in the community of practice framework can help both to categorize the factors describing an alliance process and to clarify their governance functions. We also develop a set of hypotheses regarding the relationships between factors related to different domains of process activities.

3.4.1. Alliances and Communities of Practice: Similarities and Differences

Social practice has been conceptualized as sets of mental and emotional activities which represent a routinized way of understanding, interpretation, desiring, knowing how to do something (Reckwitz, 2009). It comprises both a technical sequence of acts and a meaning one endows to these acts and to the practice. This meaning is neither known before practice, nor does it stay intact and unchanged as the practice evolves, rather it is continuously negotiated (inferred and verified). Partners to an alliance remain independent organizations while working together and sharing control over continuously contributed resources. Intentions, goals, and a meaning behind each other's actions as well as shared alliance goals and ways to achieve them are unknown at the outset of collaboration and should be discovered while working together.

The negotiation of the meaning of joint activities (or of social practice) is a part of social relationships. It may or may not involve the use of direct communication. It happens through two intertwined processes – *participation* and *reification*, – which lead to the emergence of communities of practice (Wenger, 1998). The process of *participation* is defined as mutual recognition and the mutual ability to affect each other and be affected (Wenger, 1998: 56). Participation describes actor's relations with his/her social environment. *Reification* occurs when actors create the points of focus by giving fixed form to certain understandings and experiences. That is, reification describes the meaning the actor projects on the environment and this meaning

varies across people and circumstances. Around that (temporally) fixed meaning, social actors negotiate what matters, i.e. defend opinions, understand what to do and how (Wenger, 1998: 93). Participation and reification sustain each other. On one hand, participation is not possible unless some basic mutual understanding and agreement was achieved. Negotiations will collapse if everything is constantly reified. On the other hand, if rules for participation are rigid and over-specified, opportunities for meaning creation can be blocked (Wenger, 1998: 59, 92).

A description of alliance activities provided in a set of founding documents rarely suffices to guide partners' actions as an alliance unfolds. In their everyday operations partners should also rely on informal social-psychological processes (Ring and Van de Ven, 1994) that correspond to the participation and reification processes described by Wenger (1998). According to Ring and Van de Ven (1994) and Ring (in Beamish and Killing, 1997), informal social-psychological processes enable partners to implement formal activities directed at reaching an agreement, planning, and implementation. Thus, first partners clarify and then verify each other's individual identities as well as establish their social identity within an alliance (i.e. relatively to their partners). These are informal processes of sense-making and understanding. They support two formal processes: the *negotiation process*, which is directed at determining the alliance goals and potential, and the *transactional process*, in which partners deal with the formalization of agreements. Then, as partners begin to execute formal agreements, they begin to develop social bonds. Friendship, trust, loyalty, etc. or the opposite can be built in this process. If individuals succeed in establishing social bonds and start perceiving themselves as members of the same social group, they will develop an implicit understanding of the norms for appropriate behavior. Since uncertainty associated with parties' behavior cannot be completely eliminated through formal contract, social norms help to bring about an order in the group, i.e. in the alliance. Social bonding evolves while partners engage repeatedly in sense-making and understanding processes to adjust for incongruences in their expectations for collaboration. Ring and Van de Ven (1994) emphasized the role of equity and fairness rules – which are closely related to the reciprocity rule (Emerson, 1976) – as criteria for evaluating the congruency between partners' expectations for the relationship and the way the relationship evolves. Furthermore, in their case study, A. Ariño and J. de la Torre (1998) observed that in alliance daily operations, when partners observed discrepancies between what had been previously negotiated and the reality, which violated conditions of equity and/or efficiency, they tried to initiate a re-negotiation process to restore a congruent understanding of their joint activities again. If partners were unable to mutually adjust, relational quality - which is related to social bonds discussed in the framework of Ring and Van de Ven (1994) – would inevitably deteriorate and trigger unilateral corrective actions to restore the individual perception of equity. Furthermore, the low quality of the relationship increased a risk of a partner undertaking

unilateral corrective actions without trying to engage in the collective processes of re-evaluation and adjustment, which would lead to further deterioration of relational quality.

Reaching congruency in partners' priorities and expectations for collaboration marks the emergence of a psychological contract. In the vocabulary of communities of practice, this means that partners were able to fix (although probably only temporarily) the meanings of important experiences and events. A psychological contract greatly facilitates day-to-day alliance management. Thus, when a problem emerges they do not need to guess whether it was caused by some operational mistake, by external factors that were not under a partner's control, or if this was due to a lack of commitment by one partner. However, the understandings fixed in the psychological contract exist only between the individuals that developed this contract. Ariño and de la Torre (1998) observed the sudden deterioration of the relationship associated with the departure of founders of the studied joint venture. They explained that "[a]greements and understandings that may have been implicit in their thinking, or that could have been articulated in an informal telephone call, are now easily misinterpreted by those not involved in the original design and negotiations" (Ariño de la Torre, 1998: 321). Similarly, Ring and Van de Ven (1994) stressed the importance of institutionalization for ensuring that an alliance will last longer than the tenure of its founders.

While participation and reifications together lead to the emergence of a community, learning is the reason for its continuity⁵ and adaptability (Wenger, 1998: 96-98), that is to say, its evolution. Learning acts in the following way: Learning and internalizing the system in place, and understanding all its characteristics, enables participants of a community to see its internal dilemmas and contradictions. These dilemmas and contradictions stimulate participants to engage in self-reflection, creative externalization and a search for solutions. This process is consistent with the framework for the collaborative process described earlier. Indeed, after partners have clarified their individual and negotiated shared social identities, they start to verify them in the process of everyday operations. As external changes in the alliance context occur or the hidden agenda of a partner becomes evident, partners may engage in new round of sense-making, understanding, and negotiation to re-establish equity and efficiency. In such a continuous (and maybe even incremental) way, a new system is externalized and stabilized, i.e. internalized by all members of the system again. In the long run partners may institutionalize principles, enabling them to maintain and/or restore alliance stability.

⁵ Which should not be confused with stability.

In communities of practice, learning is conceptualized not as a task-oriented cognitive activity that can be undertaken independently of any other activities, but rather as a *process of being engaged in and participating in the development of the ongoing practice* (Wenger, 1998). That is, learning is intertwined with practice. Learning involves understanding the reason for being engaged in practice, resources one can use, and “what changes [...] the ability to engage in practice” (Wenger, 1998: 95). Learning cannot happen only as a result of cognitive activities without being engaged in practice directly. Similarly, it has been observed by researchers that when circumstances (e.g. time pressure) forced managers of an alliance to focus on task completion in detriment to engaging in the informal processes necessary for building and maintaining a congruent understanding of shared goals and of appropriate ways to be engaged in a project, the task was not completed (Ring and Van de Ven, 1994). From the explanations provided earlier in this section it is possible to infer that the ability to engage in a cooperative effort is not given, but learned in the process of interactions.

Past theoretical research suggests, and empirical studies confirm, that in alliances partners learn about how to complete a task with each other, the learn about each other, and about alliance management (Inkpen and Tsang, 2007; Lubatkin, Florin and Lane, 2001). All these types of learning enable partners to achieve and maintain a shared understanding of alliance goals. Learning about the partner entails familiarization with his skills, routines, and culture. The basic understanding of the concepts and principles underlying partners’ core knowledge domains facilitates effective communication, makes them more receptive (Inkpen and Tsang, 2007), and helps to identify superior combinations of resources and sources of interdependency (Lubatkin, Florin and Lane, 2001). Routines and culture guiding partners’ behavior comprise knowledge about their goals, priorities, and constraints. This knowledge helps to establish a feasible scope of the project, to learn what interests of each partner can be satisfied via joint project and how. To restate, this knowledge helps to build shared alliance objectives and simultaneously reduces the possibility of conflict, making partners more receptive to the realities and limitations of each other and therefore can help sustain and deepen the commitment to an alliance (Das and Kumar, 2007; Lane and Lubatkin, 1998). This knowledge is needed for effective coordination and control, and enables alliance adaptation. Several case studies of strategic alliances (e.g. Doz (1996), Ariño and de la Torre (1998)) concluded that the creation and evolution of an alliance’s joint project is a result of the learning process. The above-described process of learning in alliances is compatible with the conceptualization of learning in communities of practice (Wenger, 1998). Specifically, Wenger (1998) suggests three domains of activities along which learning-in-practice should occur: (a) discovering the ways of becoming engaged in mutual relationships and the identities of participants; (b) defining common objectives, the ways of reconciling conflicting interpretations,

and keeping each other accountable; (c) creating and breaking routines, defining and redefining terms, renegotiating meanings, producing artifacts, tools, and representations.

Whether learning will lead to adaptation and change or not, depends not only on some external characteristics of a situation, but also on particular decisions made in a local situation. Some situations can be “sealed” so strongly that there is little probability that individual learning, self-reflection, and creativity can bring changes about (Engeström in Engeström, Mietinen, Punamäki (eds.), 1999). In this case, the relationships that have produced such practice will eventually evolve into crisis (Wenger, 1998; Ariño and de la Torre, 1998). In their case studies, Bridwell-Mitchell (2016) found that learning led to changes in institutionalized organizational practices only in organizational environments that were characterized by trust in members who seeded new practices and strong socialization across the entire community, among other factors.

Studies that apply the community of practice perspective to analyze inter-organizational collaborations are scarce (Bridwell-Mitchell, 2016). Additionally, the majority of studies that do rely on this perspective were conducted on collaborations between public organizations. We have identified only one study (by Juriado and Gustafsson, 2007) analyzing collaboration between public and private organizations. In their case study, Juriado and Gustafsson (2007) described the emergence of a community of practice in an interorganizational partnership created for organizing a large-scale annual media event. They found that although at the outset of the project the community of practice did not exist among the members of the newly formed interorganizational project group, it emerged as the project was unfolding. Although Juriado and Gustafsson (2007) did not aim at describing the process of transformation of two independent teams in a community of practice, they identified some factors associated with its emergence. These factors are: (a) trust; (b) a clear division of labor and differences in participants’ perspectives; (c) the importance of tacit knowledge about management; (d) social bonding. Researchers in the alliance field have stressed the importance of these factors for management of strategic alliances. First, the number of reasons force partners to an alliance care about the development and preservation of trusting relationships. On one hand, trust is instrumental for attainment of relational rents (Dyer and Singh, 1998). In projects where alliance-specific investments can result in significant gains, partners are motivated to behave in a trustworthy way in order to create conditions for such an investment (Palmatier, Dant, and Grewal, 2007). On the other hand, when trust gets institutionalized, its function evolves from being an incentive into becoming a self-administered control mechanism, and in this way, it helps to remedy the incompleteness of formal contracts.

Second, Zajac and Olsen (1993) explained that only when all partners’ perspectives are adequately

accounted for and reflected in an alliance's shared project, an alliance process can become dynamic and adaptable. Although a general understanding of responsibilities is developed by partners in the beginning of a collaboration, it is difficult to foresee all possible contingencies and their influence on partners' firms. The knowledge of how an alliance project contributes to each other's goals helps partners choose the correct course of actions and to coordinate their actions as well as to adapt to each other as collaboration unfolds (Lubatkin, Florin and Lane, 2001).

Third, tacit knowledge about alliance management includes an understanding of what it takes to enact and maintain shared goals in the course of daily management (Doz, 1996). This knowledge is developed through social relationships and is "embedded" in individuals who participated personally in that process (Ring and Van Ven, 1994). That is, this is tacit individual knowledge which may easily be lost if a person who has this knowledge leaves before it has been institutionalized.

Finally, social bonding is affective in nature and "entails [the] familiarity, friendship, and personal confidence built through interpersonal exchange" (Rodriguez and Wilson, 2002: 55). Social bonds entail commitment (Ring and Van de Ven, 1992), prevent opportunism, lower conflict, and coordination costs (Madhok, 1995), as well as foster trust (Nooteboom, Berger, and Noorderhaven, 1997), and reduce the level of conflict (Palmatier, Dant, and Grewal, 2007).

So far we have devoted a lot of attention to show how informal processes underlying day-to-day management and the evolution of strategic alliances are similar to processes happening in communities of practice. Communities of practice are informal organizations; they can emerge naturally within work-based formal organizations as well as can be initiated purposefully (Brown and Duguid, 2001; Wenger, 1998). Lave and Wenger (1991) explained that these informal organizations develop wherever people interact to solve some specific problem, and learn and share experiences by engaging in mentoring, apprenticeship, storytelling, etc. We have shown that strategic alliances are characterized by a high level of ambiguity related both to the task and to the behavior of a counterpart, which cannot be dealt with by relying on formal means only. Heavy reliance on formal means can be suitable for work-teams with clearly defined tasks and known solutions. Therefore, if partners to an alliance are to achieve their goals, they need to know how to engage in and manage informal collaborative processes.

However, strategic alliances are not identical with communities of practice. Community of practice is informal organization that can emerge among individuals working together in any formal organization, including interorganizational collaborations if necessary conditions are present. The

keystone of any community of practice is socialization. Without participation, there cannot be a community of practice, and without being included and becoming an insider, one cannot learn with the community (Wenger, 1998). Any impairment in the socialization process puts the emergence and/or evolution of a community in danger. Importantly, participation is not equivalent to the distribution of decision rights in formal organizations. That is, even in unilaterally controlled alliances, partners can foster participation by relying on consultative and cooperative styles of decision-making. Obviously, there can be situations when the development and evolution of a community of practice between partners will not be possible, e.g., when one of the partners has a hidden agenda, or purposefully restricts the participation of other partners, or when partners adopt clearly competitive strategies like in the “learning race” alliances described by Hamel (1991).

3.4.2. Alliance Process and Governance from Communities of Practice Perspective

Determinants of alliance success remain the focus of researchers’ interest as much today as they did thirty years ago. However, at this time, the focus of research has shifted from predominantly studying alliance’s design and structural conditions to including the collaborative process in the analysis. Specifically, the way the collaborative process is conceptualized, its role in alliance governance and success, and its relationships with alliance design and other structural factors.

Despite extensive research, current understanding of a number of questions remains unclear. One problem is the lack of attention to how informal relational governance occurs / acts through formal and informal activities unfolding between partners as the alliance moves forward. Out of the wide range of process characteristics, researchers have mainly focused on trust and its capacity to serve as a governance instrument. Researchers have not yet exploited the fact that governance is based on a number of mechanisms – i.e. coordination, control/monitoring, motivation/ incentives – all of which cannot be embodied by any single individual characteristic of the process, even by trust. To deepen the understanding of this question it is necessary to develop such a conceptual framework for collaborative process, that on one hand will describe developmental stages of the process, while on the other hand, will account for the process characteristics observed by researchers and experienced by partners. Elements of such a conceptual framework could then be analyzed with respect to their capacity to facilitate governance. This topic was studied in the third chapter.

Similarities between the forces that drive the emergence and evolution of relationships between partners in an alliance and between members of communities of practice have been established. We relied on the description of formal and informal alliance processes from the relational perspective on alliances, and on the conceptualization of the developmental stages of practice from the

community of practice perspective, to describe the domains of activities in which partners engage while performing their tasks. Furthermore, we assigned the process characteristics frequently employed in the alliance research to one of these domains and developed hypotheses about the relationships between these characteristics. Moreover, the governance functions of distinct activity domains have been discussed.

Another problem that has not yet been completely understood is the role of alliance social structure characteristics in the alliance success. Divergent empirical findings with respect to the influence of national cultural distance and prior mutual alliance experience – the two most widely studied characteristics of alliance social structure – on alliance performance continue to puzzle researchers. Although prior meta-analytical studies have established the absence of or the very weak effect of some alliance social structural characteristics (i.e. national cultural distance) on its performance, they neither explored the reasons behind these counterintuitive findings, nor did they meta-analyze the effects of other social structural characteristics. To understand how and under which conditions alliance social structural characteristics affect its performance, it is useful to look at how these characteristics affect the ability of partners to establish relationships conducive (or not) to alliance success. This issue has been addressed in the forth chapter.

With recourse to the concept of norm, points of connection between the institutional logics and the social exchange perspectives were established. This made it possible to derive hypotheses about the role of the developmental characteristics of interpartner relationships in transmitting the effect of social structure on performance. The existence of relationships between alliance social structural characteristics and the most frequently studied developmental characteristics of interpartner relationships as well as the role of the latter in transferring the effect of social structure on performance has been meta-analytically explored. Furthermore, the role of varying conceptualization and the measurement of the constructs among other possible moderating conditions has also been considered.

Yet another important underexplored question is related to the role of prior experience on alliance success. Empirical findings on this question were conflicting. Furthermore, previous research did not distinguish systematically whether the content of prior experience matters for alliance performance, learning, and partners' ability to build high quality relationships conducive to alliance success. These problems have been dealt with in the fifth chapter. We performed a meta-analysis in order to reconcile previous inconclusive empirical findings and to systematically explore the implications of differences in the content of prior experience for alliance process, learning, and performance.

Several points for further research were identified. The most obvious was an empirical validation of the suggested models on the data derived from a single sample rather than from various samples. Meta-analysis is a secondary analysis that allows for explores the newly proposed relationships and models that had not been tested before. However, it does not substitute primary empirical validation. Next, the feasibility of the models was explored using factors that were the most frequently studied in the primary empirical research. Less frequently studied factors could not be included in the meta-analysis. The proposed activity domains describing interactions between partners can guide both the choice of other characteristics of relationships to be included in analysis and the development of hypotheses about the relationships between them as well as help in understanding their role in the alliance informal relational governance. The same is true for social structure characteristics. Moreover, guided by a conceptual understanding of these categories, researchers can draw from general organizational theory to identify additional relevant factors and/or dimensions of currently employed factors that have not yet been studied.

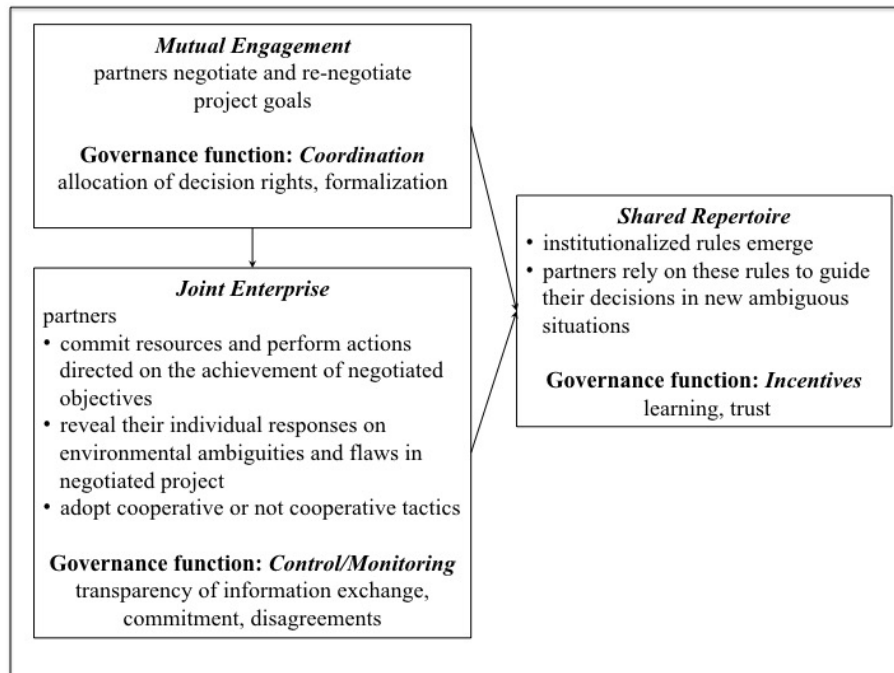
The evolutionary character of the alliance process and governance could not be captured by the performed analysis. At different points of the alliance lifecycle the importance and/or role of different factors in alliance governance and performance may change. It is worthwhile to understand these possible changes, their consequences, and the factors determining whether these consequences will be positive or negative.

Furthermore, it was not possible to evaluate the generalizability of current empirical findings for all the relationships described by the models. Despite the fact that the number of moderating factors has been identified, the estimates of population correlations describing some relationships continue to be heterogeneous. This points to the possible presence of other moderating conditions. Additionally, some relationships have not been thoroughly studied or have not been studied at all. It is necessary to deal with these blind spots in future research.

The aim of this dissertation was to advance the research on and facilitate the practice of the governance of strategic alliances. As it was explained in the second chapter, systematic quantitative analysis of empirical findings from individual studies allows for better estimates of true population correlations and establishing the extent of the generalizability of the current empirical results. It is therefore helpful to analyze the current state of research objectively and suggest how it can regain force by identifying useful directions for further research. The broad theory-based frameworks which have been proposed, unify fragmented theoretical and empirical contributions, and therefore this analysis will help to understand the high-level implications of the accumulated body of research better. The research conducted in this dissertation will also be useful to practitioners by

rendering elements of informal relational governance more comprehensible, and by suggesting which areas of alliances process and performance can be affected by social structural characteristics as well as by suggesting how different types of prior experience contribute to an alliance.

Figure 3-1. Proposed Model of Collaborative Process in Alliances



Source: self-elaborated

The second dimension is *joint enterprise*. Joint enterprise is a result of mutual continuous negotiations and should not be equated with the formal intended goals conceived at the outset of collaboration. Joint enterprise can come to include instrumental, personal, and interpersonal aspects of life (Wenger, 1998). Although joint enterprise reflects the collective (emerged) meaning members of a community give to their participation; this meaning should not be homogeneous across participants. Social practice evolving in a community is part of larger social contexts, therefore, meanings that participants bestow on their joint enterprise are affected by the position of a community within economic and social systems as well as by more locally established institutions which are different across individuals (resources, market position, culture etc.). However, this influence is not direct, rather it is mediated by the ability of the community and individuals to negotiate the meaning of their joint enterprise. The process of mediated negotiation (or enactment) is ongoing. Members are consciously aware of what material and immaterial

elements (artifacts) are appropriate, what they can discuss and what they should ignore, which behavior is accepted and which requires approval in a new round of negotiation.

Thus, as a result of mutual engagement, partners develop an understanding of the meaning of the alliance project and of the acceptable ways of being engaged in it. Next, partners engage in joint enterprise by making actual commitments according to the understanding developed in the previous stage. This understanding now materializes and become visible in the specific actions of partners. They also judge the quality of each other's actions relying on the understanding developed in the mutual engagement phase. In this process readiness to share information facilitates the interpretation of each other's actions, which is especially important when unforeseen problems arise and partners cannot keep their promises. Such characteristics of interactions between partners as the extent to which partners' actual commitments to the project are close to what is expected, the extent of conflicts between them, and the transparency of information exchange describe actions constituting this process dimension.

Activities falling under the domains of mutual engagement and joint enterprise are related in the following way. Depending on the degree that participation in decision making is shared and upon reaching agreements, as well as the extent to which the reached agreements can be re-negotiated, partners can implement their commitments as expected and provide information facilitating the completion of tasks and the monitoring each other's progress. Specifically,

Hypothesis 1a-c: To the extent to that operational control is shared it increases a) interorganizational commitment and b) the transparency of information exchange, and decreases c) disagreements.

Hypothesis 2a-c: Formalization is positively related to a) interorganizational commitment and b) transparency of information exchange, and negatively related to c) disagreements.

The third dimension is *shared repertoire*. Shared repertoire consists of material and immaterial elements (artifacts) that have emerged as a consequence of the negotiation of a meaning of a joint enterprise. Repertoire consists of artifacts but not in their material expression. Artifacts comprising shared repertoire are given meaning (i.e. reified) and are attached to particular practice. A change in shared repertoires marks a change in a practice. This change is possible because the meaning behind elements of repertoire can be negotiated (reified).

Shared experiences during episodes of both mutual engagement and join enterprise provide context for creating interpretive frameworks – shared repertoire – that are embedded in such shared

resources as routines (including documents, plans, schedules, etc.), tools, vocabulary, and stories which come to govern the community. Deep and tight interpersonal relations created in the mutual engagement step can generate emotional states – e.g., trust – that can come to “constitute the core characteristic of a shared practice”; these emotional states do not need to be equated with an organizational culture, they even can contradict each other (Wenger, 1998: 75). The shared repertoire which comes to govern the relationship is a result of purposeful sensemaking in specific situations rather than rules inherited unconsciously. Thus, learning and trust describe this dimension.

The activities constituting the domains of mutual engagement and shared repertoire are related in the following way: to the extent that partners participate mutually and equally in an alliance process, and gain the necessary knowledge about each other’s goals and capabilities, and are capable of adjusting previously reached agreements, they will be able to come up with shared interpretive frameworks for their collaborative process. Activities directed at achieving a common understanding of a project help partners to learn jointly about the task and about the process of cooperation as well as to create trust in personal relationships. Specifically,

Hypothesis 3a-b: To the extent to that operational control is shared, it increases a) learning and b) trust.

Hypothesis 4a-b: Formalization is positively related to a) learning and b) trust.

Over time, partners accumulate mutual experiences, encounter diverse ambiguous situations, and learn how to interpret them and each other’s actions. In the process of interactions directed at alliance goal achievement managers develop “social-psychological bonds of mutual norms, sentiments, and friendships (Homans, 1962) in dealing with uncertainty” that lead to trust (or mistrust) (Ring and Van de Ven, 1994: 93). Moreover, the quality of actions directed at the implementation of their agreements will influence partners’ understanding of a feasible scope of the joint project and therefore opportunities for learning. Specifically,

Hypothesis 5a-b: Interorganizational commitment is positively related to a) learning and b) trust.

Hypothesis 6a-b: Transparency of information exchange is positively related to a) learning and b) trust;

Hypothesis 7a-b: Disagreements are negatively related to a) learning and b) trust.

3.5 METHODS

3.5.1. Sample

The process of the collection and selection of studies from which we have extracted the correlation coefficients meta-analyzed in this chapter is described in sections 2.3.1 to 2.3.4. After controlling for duplicated effect sizes, our data collection process resulted in 67 usable studies; the number of alliances per relationship analyzed (N) was between 166 and 4047. The number of studies (k) used to calculate the weighted average correlations in our meta-analysis ranged from 2 to 26 per relationship.

3.5.2. Variables

From the collected studies we extracted variables describing the characteristics of the collaborative process and its informal governance instruments. Definitions of the variables are provided in Table 2-1. We categorized these variables according to the classification described in section 3.4.2:

- a) *mutual engagement dimension*: unilateral control by one partner, balanced participation, and formalization.
- b) *joint enterprise dimension*: transparency, commitment, and disagreements.
- c) *shared repertoire dimension*: learning and trust.

3.6. RESULTS

Table 3-1 reports the results of the meta-analysis: weighted mean correlation corrected for measurement error, estimated variance of the corrected correlation, and its confidence interval as well as the measures of the extent of heterogeneity (credibility intervals for the mean corrected correlation, percent of variance accounted for by corrected artifacts, and chi-square test for heterogeneity).

3.6.1. Relationships Between Activities Constituting Domains of Mutual Engagement and Joint Enterprise

Eight relationships corresponding to hypothesis 1 and hypothesis 2 were analyzed: *shared operational control* with (1) interorganizational commitment, (2) transparency of information exchange, and (3) disagreements; *unilateral operational control* with (4) interorganizational

commitment, (5) transparency of information exchange and (6) disagreements; *formalization* with (7) interorganizational commitment, and (8) transparency of information exchange.

Hypothesis 1. As expected, *shared operational control* positively and significantly influences *commitment* $\bar{r}_c = 0.50$ (95% CI is 0.36 to 0.64) and *transparency* of information exchange $\bar{r}_c = 0.54$ (95% CI is 0.44 to 0.65). The percentage of variance accounted for by artifacts (34% and 32% respectively) and chi-square tests for heterogeneity (Q=20.16, p=0.00 and Q=24.15, p=0.00 respectively) suggests the possible presence of moderating variables. However, since their credibility intervals do not contain zero (CR is 0.33 to 0.67 and CR is 0.40 to 0.68 respectively) only the magnitudes of the correlations may depend on context, while their signs remain positive. As expected, *shared operational control* negatively influences *disagreements* $\bar{r}_c = -0.25$ (95% CI is -0.38 to -0.11). This relationship was homogenous: the percentage of variance accounted for by artifacts is 100% and the Q statistic of chi-square tests for heterogeneity is not significant (Q=4.49, p=0.21). Its credibility interval does not contain zero (CR is -0.36 to -0.13). Therefore, hypothesis 1 for *shared operational control* is supported by the results of our analysis.

Unilateral operational control positively and significantly influences *interorganizational commitment* $\bar{r}_c = 0.42$ (95% is 0.33 to 0.51). This relationship is homogenous: the percentage of variance accounted for by artifacts is 100% and Q statistic of chi-square tests for heterogeneity is not significant (Q=0.64, p=0.42). The relationships between *unilateral operational control* and both *transparency* and *disagreements* are not significant (95% CI is -0.53 to 0.18 and CI is -0.04 to 0.34 respectively). However, these relationships are heterogeneous according to all three tests for heterogeneity. The percentage of variance accounted for by artifacts is much less than 75% (7% and 29% respectively). Their credibility intervals contain zero (CR is -0.52 to 0.27 and CR is -0.08 to 0.38 respectively). Q-statistics of the chi-square tests for heterogeneity are significant (Q=56.83, p=0.00 and Q=17.33, p=0.00, respectively). Thus, both the signs and the magnitudes of these correlations are contextually dependent. It should be noted that judging by the credibility intervals, the distribution of population correlations for the relationship *unilateral operational control* – *transparency* is negatively skewed, and population correlations tend to be largely negative; the relationship *unilateral operational control* – *disagreements* the distribution is negatively skewed.

Hypothesis 2. As expected, *formalization* is positively and significantly related to both *interorganizational commitment* $\bar{r}_c = 0.47$ (95% CI is 0.37 to 0.57) and *transparency* $\bar{r}_c = 0.29$ (95% CI was 0.18 to 0.40). These relationships were homogenous according to all criteria. The

percentage of variance accounted for by artifacts was much more than 75% (100% for both relationships) and the Q-statistics of the chi-square tests for heterogeneity were not significant ($Q=1.37$, $p=0.50$ and $Q=1.45$, $p=0.23$, respectively). Therefore, Hypothesis 2 is supported.

Table 3-1. Meta-Analytic Results for Characteristics of Mutual Engagement, Joint Enterprise and Shared Repertoire domains

Relationship		k	N	\bar{r}	$\hat{\sigma}_{\rho}^2$	95% CI		80% CR		Expl. var., %	Q (p)
Shared op. control	Commitment	5	564	0.50	0.017	0.36	0.64	0.33	0.67	34	20.16 (0.00)
	Transparency	6	984	0.54	0.012	0.44	0.65	0.40	0.68	32	24.15 (0.00)
	Disagreements	4	358	-0.25	0.008	-0.38	-0.11	-0.36	-0.13	100	4.49 (0.21)
Unilateral op. control	Commitment	2	166	0.42	0.000	0.33	0.51	NA		100	0.64 (0.42)
	Transparency	4	558	-0.17	0.121	-0.53	0.18	-0.62	0.27	7	56.83 (0.00)
	Disagreements	5	528	0.15	0.032	-0.04	0.34	-0.08	0.38	29	17.33 (0.00)
Formalization	Commitment	3	401	0.47	0.000	0.37	0.57	NA		100	1.37 (0.50)
	Transparency	2	272	0.29	0.000	0.18	0.40	NA		100	1.45 (0.23)
	Disagreements	-	-	-	-	-	-	-		-	-
Shared op. control	Learning	2	385	0.33	0.002	0.20	0.46	0.27	0.39	70	3.27 (0.07)
	Trust	7	1034	0.34	0.017	0.22	0.45	0.17	0.50	31	23.82 (0.00)
Unilateral op. control	Learning	4	514	0.47	0.020	0.31	0.64	0.29	0.65	27	15.46 (0.00)
	Trust	3	395	0.23	0.047	-0.04	0.51	-0.04	0.51	17	17.90 (0.00)
Formalization	Learning	-	-	-	-	-	-	-		-	-
	Trust	3	710	0.22	0.042	-0.03	0.47	-0.04	0.48	14	27.00 (0.00)
Commitment	Learning	7	737	0.58	0.012	0.48	0.69	0.44	0.72	38	18.43 (0.01)
	Trust	26	4047	0.55	0.073	0.44	0.66	0.20	0.90	7	393.17 (0.00)
Transparency	Learning	6	941	0.34	0.031	0.19	0.50	0.12	0.57	17	32.04 (0.00)
	Trust	19	2256	0.45	0.046	0.34	0.55	0.17	0.72	16	122.27 (0.00)
Disagreements	Learning	4	558	-0.11	0.006	-0.28	0.05	-0.21	-0.01	67	11.94 (0.01)
	Trust	-	-	-	-	-	-	-		-	-

Note: k – number of samples; N – total sample size; Mean r – sample-size-weighted mean corrected correlation; Var. ρ – estimated variance of population correlation; CI – confidence interval; CR – credibility interval; Q – Chi-square test for heterogeneity of effect sizes.

3.6.2. Relationships Between Activities Constituting Domains of Mutual Engagement and Shared Repertoire

Five relationships corresponding to hypothesis 3 and hypothesis 4 were analyzed: *shared operational control* with (1) learning and (2) trust; *unilateral operational control* with (3) learning and (4) trust; and of *formalization* with (5) trust.

Hypothesis 3. As expected, *shared operational control* positively and significantly influences *learning* $\bar{r}_c = 0.33$ (95% CI was 0.20 to 0.46) and *trust* $\bar{r}_c = 0.34$ (95% CI is 0.22 to 0.45). These relationships are heterogeneous. The percentage of variance accounted for by artifacts (70% and 31%, respectively) and the chi-square tests for heterogeneity ($Q=3.27$, $p=0.07$ and $Q=23.82$, $p=0.00$, respectively) suggest the possible presence of moderating variables. However, since their credibility intervals do not contain zero (CR is 0.27 to 0.39 and CR is 0.17 to 0.50), only the magnitudes of the correlations depend on context, their signs remain positive. Thus, hypothesis 3 for the relationships of shared operational control with learning and trust is supported.

Unilateral operational control is positively and significantly related to *learning* $\bar{r}_c = 0.47$ (95% CI is 0.31 to 0.64). This relationship was heterogeneous ($Q=15.46$, $p=0.00$), however, its credibility interval does not include zero (CR is 0.29 to 0.65). Thus, only its magnitude depends on context. *Unilateral operational control* is not significantly related to *trust* (95% CI is -0.04 to 0.51). However, the relationship was heterogeneous according all criteria. The percentage of variance accounted for by artifacts is only 17%, the Q-statistic of the chi-square test for heterogeneity is significant ($Q=17.90$, $p=0.00$), and its credibility interval contained zero (CR is -0.04 to 0.51). Thus, the sign and the magnitude can vary with context.

Hypothesis 4. *Formalization* is not significantly related to *trust* (95% CI was -0.03 to 0.47). However, the relationship is heterogeneous according all three criteria. The percentage of variance accounted for by artifacts is only 14%, the Q-statistic of the chi-square test for heterogeneity is significant ($Q=27.00$, $p=0.00$) and its credibility interval contained zero (CR is -0.04 to 0.48). Therefore, the sign and the magnitude of this relationship vary with context. Thus, according to our results, hypothesis 4 is supported only in some contexts.

To summarize, the general conclusion is that both shared and unilateral operational control are significantly associated with learning and trust, although in some contexts unilateral control may

marginally negatively influence trust. For these two relationships Hypothesis 3 is largely supported. In some contexts, formalization is strongly positively associated with trust, and in other contexts it is associated marginally negatively. Thus Hypothesis 4 is only partially supported. The search for moderating conditions that can reverse the sign of last two relationships is needed.

3.6.3. Relationships Between Activities Constituting Domains of Joint Enterprise and Shared Repertoire

Five relationships corresponding to hypotheses 5 to 7 are analyzed: *interorganizational commitment* with (1) learning and (2) trust; *transparency of information exchange* with (3) learning and (4) trust; and *disagreements* with (5) learning.

Hypothesis 5. As expected, *interorganizational commitment* is positively and significantly related to *learning* $\bar{r}_c = 0.58$ (95% CI is 0.48 to 0.69) and *trust* $\bar{r}_c = 0.55$ (95% CI is 0.44 to 0.66). Although both relationships are heterogeneous according to the chi-square test for heterogeneity (Q=18.43, p=0.01 and Q=393.17, p=0.00 respectively) and the percent of variance accounted for by artifacts (38% and 7% respectively), their credibility intervals do not contain zero (CR is 0.44 to 0.72 and CR is 0.20 to 0.90 respectively). Thus, only their magnitudes depend on context. These findings support Hypothesis 5 for the relationships between interorganizational commitment with learning and trust.

Hypothesis 6. As expected, the *transparency of information exchange* is positively and significantly related to *learning* $\bar{r}_c = 0.34$ (95% CI is 0.19 to 0.50) and to *trust* $\bar{r}_c = 0.45$ (95% CI is 0.34 to 0.55). Both relationships are heterogeneous. Thus, Q statistics of the chi-square test for heterogeneity are significant (Q=32.04, p=0.00 and Q=122.27, p=0.00 respectively) and the percent of variance accounted for by artifacts is below 75% (17% and 16% respectively). However, the credibility intervals for the corrected correlations do not contain zero (CR is 0.12 to 0.57 and CR is 0.17 to 0.72 respectively). Therefore, the results for the relationships of transparency of information exchange with learning and trust support Hypothesis 6.

Hypothesis 7. The relationship *disagreements* – *learning* is not significant (95% CI is -0.28 to 0.05) and heterogeneous. The Q statistic of the chi-square test for heterogeneity is significant (Q=11.94, p=0.01) and the percent of variance accounted for by artifacts is below 67%, which is lower than the accepted threshold of 75%. Although the upper limit of the credibility interval is very close to zero, it does not contain zero (CR is -0.21 to -0.01). Thus, only the magnitude, but not the sign of

the correlation depends on context. The search for moderating variables is needed. Overall, the results for this relationship support Hypothesis 7.

To summarize, the general conclusion is that both commitment and transparency are significantly and positively associated with learning and trust, although the strength of this association may vary across contexts. For these two relationships the hypotheses are supported. The strength of the relationship between disagreement and learning depends on context: it is possible that the correlation is either negative or not significant depending on context. For this relationship, the hypothesis is supported at least in some contexts.

3.7. DISCUSSION

Although the role of alliance process in alliance success has been one of the most important topics in the alliance field, prior research has not emphasized enough studying the process itself. Despite the fact that a large number of factors describing the alliance process has been used in the empirical research, no clear understanding of their roles in alliance governance has been developed nor the relationships between them. Moreover, no studies aiming at the empirical generalization of the relationships between the factors characterizing process have been conducted yet. Here we suggest that process factors be categorized using activity domains from the community of practice perspective – mutual engagement, joint enterprise, and shared repertoire – and have therefore accumulated findings from 67 empirical studies to explore the feasibility of the relationships between the factors falling into these categories. Furthermore, we discussed activities constituting the domains mentioned above through the prism of three governance functions – coordination, control, and motivation.

3.7.1. Effects of Operational Control

Operational control with commitment, transparency and disagreements

Participation in the decision-making process creates an opportunity to discuss each other's perspectives on collaboration and concerns during numerous negotiation episodes. It fosters a climate of openness, because partners have a better chance to align their interests. Also, partners can see what specific inputs and information they need to provide their counterparts with in order to implement the project. Therefore, *shared operation control* enhances *commitment* and *transparency* and also reduces the extent of *disagreements*. These results contradict the research that argues that dominant control by one parent is the superior way to overcome conflicts and to

secure cooperation and commitment (Mjoen and Tallman, 1997). Interestingly, we found that *unilateral operational control* also enhances *commitment*. Certainly, the ability to exercise control over alliance operations helps to ensure that resources are used efficiently and makes a controlling partner more willing to commit to the relationship. It would be natural to rely on *unilateral control* when it is necessary to ensure proper use of contributed resources given that the majority of said resources has been contributed by one partner.

Although neither *unilateral* nor *shared operational control* is detrimental to *commitment* their influence on *transparency* and *disagreements* differ remarkably. Not like *shared operational control*, *unilateral control* does have largely negative consequences on *transparency* and *disagreements*. Although in some contexts it can improve these characteristics, this improvement is much weaker in magnitude. That is, *unilateral control* exhibits a stronger tendency towards worsening *transparency*, and increasing *conflict*.

Knowledge transfer alliances can represent the context in which the relationship *unilateral operational control* – *transparency* turns positive. In knowledge transfer alliances, knowledge flows in one direction, the entire control is given to a teaching parent, and a learning parent is motivated to be more transparent to ensure the successful implementation of the transferred knowledge.

Strategic alliances formed for market access purposes can represent a situation in which unilateral control is positively associated with commitment but not with transparency. Knowledge of a market and connections provided by a local parent can be relatively easily appropriated by a foreign partner, while it will be difficult to learn the technologies and know-how of the foreign parent. Thus, while interested in collaboration, the local parent is also motivated to be protective of its knowledge.

Overall, mutual participation in activities directed at coordination facilitates activities directed at control and monitoring. This is not the case when coordination is performed by one partner. The use of *unilateral control* for coordination is appropriate only when transparency and disagreements are not the issue, e.g., in the contexts where knowledge and resources flow in one direction. Irrespective of context, *unilateral control* should not be used as a mechanism to avoid *disagreements*. Very careful consideration should be given to the use of *unilateral control* in alliances created for learning, research, and knowledge development because *unilateral control* reduces *transparency*, which is necessary for learning, and seems to cause a lack of clear directions for actions, which become reflected in disagreements.

Although here we have described some of the contexts that can moderate the effect of *unilateral operational control* on *commitment* and *transparency*, further research should be done to discover under which conditions *unilateral control* can benefit alliance processes other than *commitment* as well as which contexts make the effect of *shared operation control* stronger.

While studying causes for the heterogeneity of the effects of operational control, researchers should scrutinize the construct validity of its measures. For example, unilateral operational control does not necessarily exclude a consultative style of decision-making.

Additionally, it is necessary to note that the number of studies per relationship (k) analyzed is not very high, which can contribute to the extent of heterogeneity. Therefore, more replication studies that focus on heterogeneous relationships are necessary.

Operational control with learning

According to currently available empirical evidence, both *shared* and *unilateral operational control* facilitate *learning*.

The opportunity to discuss alliance objectives and ways to achieve them helps partners see how the actions of one partner facilitate and also affect the actions of another. Therefore, partners work more efficiently together. It may also foster mutual consultation while each one is working on his specific task. According to the information processing view, shared operational control facilitates learning by creating conditions for better communication and the dissemination of information (Makhija and Ganesh, 1997). Moreover, even when knowledge transfer or development does not constitute a primary goal for an alliance, learning should happen to enable partners to combine their skills and resources synergistically. Since a large part of such knowledge is tacit (i.e. held by individuals) as well as socially embedded, close and frequent social interaction in the process of decision-making will help grasp knowledge that is not explicit and therefore facilitates such learning. Furthermore, irrespective of the stance researchers take on learning, balance in the ability to control alliance operations ensures that all partners can satisfy their learning needs (Lin, 2005). Thus, *shared operational control* is conducive to *learning*.

With respect to the result for *unilateral operational control*, it should be noted that studies from which correlations between *unilateral control* and *learning* have been extracted were performed on learning-oriented alliances, which had the explicit objectives of knowledge transfer from a Western to a local partner. Some researchers argued that sharing operational control ensures more frequent

interactions (Lyles and Salk, 1996), which is needed to increase the exposure of a receiving partner to new knowledge and better learning. Other researchers maintained that unilateral control ensures that the procedures and systems needed for knowledge transfer and implementation are put in place and knowledge is transferred as it was intended. Although currently available empirical evidence provides support for the second explanation, it does not rule out the first one, i.e., that the knowledge transfer can benefit from closer and deeper interactions. The explanation for this is that the measures of unilateral control used in these studies reflect only the extent of control, and do not reflect other equally important aspects of it such as the control approach and the control focus (Lin, 2005). For example, an elevated share of operational control does not exclude a consultative and cooperative approach to decision-making, which allows for a fair amount of interactions between partners. In the same vein, a moderate level of unilateral control may correspond to a situation when control is split among partners, i.e., when each partner controls unilaterally only some part of the alliance activities and the level of interactions is low. E.g., one partner fully controls production, while another fully controls marketing.

The search we performed for this meta-analysis shows that in the strategic alliance field few empirical studies focus on this relationship. Therefore, more replication studies are needed in which the following questions should be answered:

The first question is about the optimal level of control. The magnitude of the correlation between unilateral control and learning may be moderated by the extent of control. That is, some level of control can be conducive to learning, but after this threshold level has been reached, further increase of the level of control may not improve learning at the same rate. Considering that tight control may worsen information exchange and incite resistance, it would be helpful to know whether an optimal level of control exists.

The second question is related to the process of knowledge transfer. Knowledge to be transferred by a teaching partner as well as knowledge currently used by a receiving partner have tacit components and are embedded in their respective social contexts. Both partners have to learn how this knowledge is embedded to ensure that the transferred knowledge will root in new ground and to overcome the resistance of a receiving party. Thus, strictly speaking, both partners have to learn. The position that a teaching partner has nothing to learn, can miss the point that knowledge transfer procedures should be tailor-made. Thus, future studies can investigate how specific activities involved in knowledge transfer are influenced by unilateral operational control. Prior research has identified four stages of knowledge creation – socialization, externalization, combination, and internalization (Nonaka and Takeuchi, 1995), – which account both for tacit elements of

knowledge and its social embeddedness. Thus, it would be interesting to know whether the extent to which operational control is shared influences these activities. Additionally, in order to understand this relationship better, different aspects of control should be considered. Lin (2005) has pointed out that researchers should not limit the conceptualization of control only to the “extent of control”. Unfortunately, his recommendation has not been heard. The inclusion in the analysis of all suggested control aspects can provide a clearer picture of how unilateral control can facilitate efficient use of resources without hampering other processes important for learning. These aspects are the control approach (coercive, consultative, cooperative, competitive), control extent (share of control conceptualized as a continuous rather than a dichotomous variable), and control focus (the scope of activities that a partner chooses to control) (Lin, 2005; Geringer and Herbert, 1989).

As it has been mentioned above, the studies included in our meta-analysis focus on learning-oriented alliances. Therefore, it is necessary to study the effect of *unilateral operational control* on learning in alliances, not focusing on knowledge transfer. Additionally, more replication studies focusing on both types of control should be conducted because the number of studies per relationship is low.

Operational control with trust

According to currently available empirical evidence both *shared* and *unilateral operational control* facilitate *trust*.

In the process of day-to-day operations, partners decide how to use resources that each of them has contributed to an alliance, i.e. how to combine, integrate, and redeploy them to achieve an alliance and their private objectives (Eisenhardt and Martin, 2000; Teece, Pisano and Shuen, 1997). Clarity reached through mutual consultations reduces the possibility of misinterpreting motives and attributing problems to opportunistic intents, as well as discourages willingness to unilaterally correct situations that are perceived as unfair. Also, partners come to better understand how their economic interests are linked. Thus, *shared operational control* is conducive to the development of *trust*.

However, *unilateral operational control* and *trust* are not inherently mutually exclusive either. Centralized decision-making can reflect resource contribution structure. Contributing and at the same time managing critical resources is consistent with the fairness principle, and also “secures” their efficient use. Together this promotes trust. It can also help to reduce conflict in such situations

(Shenkar and Zeira, 1992) and therefore it can be conducive to trust indirectly (Steensma and Lyles, 2000).

Nevertheless, currently available empirical evidence suggests that in some circumstances this relationship may turn negative. The inability to adequately account for the dependent partner's perspective caused by the lack of his participation can create the vicious cycle of mutual suspicions (Geringer and Hebert, 1989). In line with the previously developed discussion on various aspects of control (Lin, 2005), future research should study whether some aspects of it are more detrimental to trust than others. It can help to use unilateral control "thoughtfully", i.e. minimizing its negative consequences.

More replication studies focusing on the relationship of operational control with trust are necessary.

Overall, we can interpret the results for *operational control* in the following way. *Shared operational control* is a more secure way to ensure participation and shared meaning development than *unilateral operational control* because it has a consistent influence on all three factors we used to describe the activities of the joint enterprise domain. Also, its effects are stronger in magnitude, judged both by the mean corrected correlations and their credibility intervals. It is also a more reliable predictor of *trust*, although the magnitude of its positive effect on *learning* is slightly weaker than that of *unilateral operational control*. *Shared operational control* is more strongly related to activities constituting the joint enterprise domain than to activities from the shared repertoire domain (judging both by the magnitudes of the mean corrected correlations and the credibility intervals). The same is true for *unilateral operational control* (judging by credibility interval).

3.7.2. Effects of Formalization

Formalization with commitment and transparency

Formal contracts do not provide specific rules or procedures for alliance everyday management and administration (Poppo and Zenger, 2002; Fieldman, 2000). A clear picture of day-to-day alliance activities and the way they are interrelated and managed should be developed in the process of collaborative interactions. In the process of joint decision making, partners can identify the most efficient ways of performing their tasks and make them explicit in formal documents and specifications. *Formalization* of alliance management and administration procedures entails a clear

articulation of previously agreed upon alliance goals, and steps for their achievement, as well as the rights and responsibilities of the parties, the means for monitoring each other's actions and progress, and their information needs, etc. All together it facilitates *commitment* and *transparency*. Hypothetically, it also reduces *disagreements*, however, we have identified only one study (Tsang et al., 2004) that reported on these relationships.

Interestingly, we have not found evidence of contextual dependence in the relationships of *formalization* with *commitment* and *transparency*. This does not go in line with the suggestion that *formalization* motivates partners to be less transparent. The reduction of *transparency* was sometimes considered as unilateral corrective actions occurring in response to excessive *formalization* to compensate for the partner's reduced ability to adjust previously established courses of actions to changed circumstances. This result considered together with the finding about the possibility of a negative impact of *unilateral operational control* on *transparency*, leads to following research opportunities:

In future research, it would be interesting to answer the question as to whether partners that unilaterally control operations rely on formalization for coordination purposes at all. The logic behind this suggestion is that the dominant partner can feel less need to clearly articulate management and administration procedures for coordination and control, which can become negatively reflected in the quality of communication. Alternatively, it would be interesting to study directly what coordination instruments are used by the dominant partner. We have not identified any empirical study that focuses on *unilateral operational control* and *formalization* simultaneously. Also, replication studies focusing on the relationships of formalization with commitment, transparency, and disagreement are needed.

Formalization with trust

The existence of written rules decreases ambiguity related to partners' future actions, increases the likelihood that appropriate actions will be chosen, and allows for the early detection of problems (Das and Teng, 1998; Bouncken, 2011). Actually, *formalization* can strengthen the positive effect of other activities directed at coordination.

On the other hand, excessively detailed procedures will require the partners' frequent approvals of changes needed for adaptation to unforeseen circumstances. Time constraints may limit the ability to do so. Additionally, not leaving any room for flexibility may also reflect a lack of trust or a lack of willingness to develop trust as well as a predisposition to favor formal means for resolution of

possible conflicts rather than relational ordering. Furthermore, we can expect that in alliances oriented toward research and knowledge development, formalization can limit creativity and experimental learning.

Overall, we can interpret the results for *formalization* in the following way: *Formalization* is positively related to *commitment*, *transparency*, and *trust*. It seems that *formalization* creates a sense of security and clarity, which promotes these factors. Nevertheless, in some contexts a negative effect on *trust* can be possible. Thus, it is necessary to verify when this happens.

Due to the lack of suitable quantitative studies, we could not test the relationships *formalization* – *disagreements* and *formalization* – *learning*. It is surprising that the effect of *formalization* on *disagreements* and *learning* has escaped from researchers' attention because it is possible to construct arguments both for the positive and for the negative associations between these factors.

3.7.3. Effects of Commitment, Transparency and Disagreements

Commitment, transparency and disagreements with learning and trust

The partners' ability to keep promises related to the commitment of skills, resources, and efforts is crucial for the alliance survival. Open and pro-active communication facilitates sharing ideas and a timely resolution of problems emerging in the course of the project execution. Taken together these factors create conditions for learning about the alliance task.

A willingness to adjust to another party's needs when unexpected circumstances occur, to account for a partner's goals while implementing one's own goals, and efforts directed at becoming more familiar with a partner, demonstrate the importance of the relationship and its continuity for the partner. High quality communication helps to interpret each other's actions and to avoid attributing problems to opportunistic intents, which reduces a climate of suspicion. Thus, *commitment* and *transparency* together reinforce behaviors leading to *trust* and *learning*.

Interestingly, we have found that, although the strength of the effect of *transparency* on *trust* may depend on context, the effect itself is always positive. Thus, it raises a question about the need to distinguish between two constructs: transparency and core knowledge protection. Transparency can be related to sharing information relevant to implementing the project, while the disclosure of a partner's proprietary knowledge is not *a priori* required for achieving alliance objectives. In future

empirical research, it is necessary to ensure that the operationalizations used distinguish adequately between these two constructs.

Overall, we can interpret the results for *commitment*, *transparency* and *disagreements* in the following way: *Commitment* and *transparency* are positively related to *trust*. It seems that the partners' "positively loaded" behavior is an efficient strategy for eliciting similar behavior from the counterpart. *Commitment* and *transparency* as manifested by providing needed resources and information are also positively related to *learning*. Frequent and intense *disagreements* may reflect a poor understanding of the alliance and partners' tasks, or of suitable ways to perform them, and are detrimental to *learning*. Due to the lack of quantitative studies, we could not test the relationship *disagreements* – *trust*. Although we can speculate that a positive effect is not likely, it is possible that a negative impact is moderated (e.g. by the type of conflict resolution mechanisms applied). In future research, this link should be explored. Additionally, more replication studies focusing on the relationships of commitment, transparency, and disagreements with learning are needed.

3.7.4. Alliance Process and Its Governance Functions

Activities describing different process domains differ in their governance functions. The governance function of activities in the *mutual engagement* domain is related to establishing the basis for coordination and adjustment. Collaboration requires joint efforts from independent partners, i.e. partners neither can impose all administrative rules unilaterally, nor they can use market mechanisms to coordinate their action. Partners will voluntarily agree to be guided by the established rules and procedures only if they perceive the division of costs and benefits expected from their participation as equitable and efficient. Only while this condition is maintained will they perform their responsibilities and planned tasks as expected (Ring and Van de Ven, 1994). To ensure that the planned way to do the work corresponds to the individual partner's perception of equity, they should ensure that the level of participation is sufficient for eliciting and accounting for each partner's priorities.

The *joint enterprise* domain is related to the governance functions of monitoring and control. The clarity of the expectations established in the activities of the *mutual engagement* domain provides the necessary basis for control and monitoring because it guarantees that partners know which actions are expected of them; it also prevents partners from breaching the equity principle unwillingly. Partners will be "testing and revising" these expectations "as time (and sequential actions) flow by" (Emerson, 1976: 352). By fulfilling their commitments as expected, partners send

a positive signal, which helps to elicit similar behavior, i.e. can be reciprocated. It creates conditions enabling desirable behavior. Such an approach to control – control by encouraging – is clearly different from control performed by exercising the right to block undesired behavior (e.g. formal means of control).

Willingness to accommodate each other's requirements and to share relevant information signals that partners are motivated to preserve their relationships. Governance functions in the *shared repertoire* activity domain relate to incentives (motivation). The norms and procedures constituting this domain are instrumental for the continuity of the focal relationship. In contrast to the first two domains, shared repertoire is not described by physical actions, but rather is described by changes in the emotional and mental states that correspond to the emergence of trust and learning. Trust and other norms complement formal safeguards and are necessary for reducing the perception of risk, while learning is needed for creating opportunities for cooperative specialization and widening the limits of common gains.

Overall, our findings are consistent with the idea that activities constituting the alliance process can be described along these three domains borrowed from the community of practice perspective. Each domain has its unique function and they are strongly related to one another.

Consistent effects in the *joint enterprise* activity domain with the *shared repertoire* activity domain suggests that the reliance on control by “encouraging” rather than on control by “imposing” as well as observable equity and fairness preservation efforts generally succeed in bringing about desired states of trust and learning (*shared repertoire*). Moreover, their ability to do so is stronger than that of *mutual engagement*. However, the proper execution of activities in the *joint enterprise* domain is feasible only if the necessary basis has been created by activities in the *mutual engagement* domain. Importantly, these domains differ in the extent of manageability. Only activities within the *mutual engagement* domain can be influenced directly. Actions and reactions that constitute the other two domains – *joint enterprise* and *shared repertoire* – can be managed only indirectly by establishing the necessary foundation in the previous steps.

3.8. CONCLUSION

In this study, we have proposed the framework allowing us to establish links between a variety of activities constituting the collaborative process, and analyzed the governance functions of these activities. Our results show that the proposed framework is feasible and therefore it can be further elaborated and tested through primary empirical studies. The revealed heterogeneity of the meta-

analyzed relationships points out the need (1) to conduct more constructive replication studies to reduce the heterogeneity caused in some cases by the small number of studies per relationship meta-analyzed; (2) to pay serious attention to testing possible theoretical and methodological moderators. Future empirical studies can more closely scrutinize the reasons for the heterogeneity found in our meta-analysis. Also, our data collection effort showed that some relationships have not been studied empirically at all.

Informal relational governance is a process that cannot be captured by any individual factor, not even by such an important factor as trust. Informal relational governance evolves through a series of different but strongly interdependent activities with respect to their functions.

Therefore, for the success of informal governance in alliances it is important to ensure that the activities aiming at the same governance function (i.e. coordination or monitoring or motivation) are not absent simultaneously. The suggested framework can help managers to develop a holistic understanding of the efforts necessary for the implementation of relational governance and guide them in developing absent informal governance instruments.

To benefit from informal relational governance, partners should be aware that their choices and the quality of their actions and reactions have implications for the vitality of the community of practice in which they engage, for their ability to establish a shared alliance project and to learn as well as for efficiency of each specific governance function. Partners can engage in the gradual production of shared collaborative culture by creating a context allowing for the flexible analysis of each other's perspectives and by showing their commitment to the continuity of the relationship.

Overall, all domains of activities derived from the community of practice framework can be applied to the alliance process; actions, behaviors, and states belonging to these domains can trigger such governance mechanisms as coordination/adjustment, monitoring/control, and motivation. A better understanding of the dimensions of the collaborative process and their governance functions can help partners to arrive at an efficient process governance of their alliance.

CHAPTER 4. ALLIANCE SOCIAL STRUCTURAL CHARACTERISTIC AND PERFORMANCE

4.1. ALLIANCE SOCIAL STRUCTURE

4.1.1. Current State of Research

Both individual and organizational actors are interacting in social contexts that provide them with valuable information to guide their behavior (Granovetter, 1985). Alliance social structure contains characteristics of dyad social construction – i.e. of social characteristics of partners in relation to each other – and is an initial condition of an alliance (Doz, 1996). Social characteristics of partners are characteristics of populations and social relations in which partners to an alliance are embedded (Stinchcombe, 1965:142). Social structural factors most frequently studied in the alliance field at the level⁶ of alliances are mutual experience and national cultural distance.

Differences in cultural values and experience of working together developed prior to a focal alliance have been of great interest both in international business and strategic management research during the last three decades (Werner, 2002; Beamish and Lupton, 2016). In the alliance field, researchers have extensively studied the effects of national cultural distance and prior mutual experience. They researched questions related to partner selection (Li, Portugal and Ferreira, 2008; Nielsen and Gudergan, 2012), alliance design (Gulati, 1995; Gulati and Singh 1998; Bowe et al, 2014; Reuer and Ariño, 2002; Ariño, Ragozzino and Reuer, 2008; Globerman and Nielsen, 2007; Li et al., 2010; Praveen Parboteeah, 2015; Reuer et al., 2014), changes in ownership structure and contractual renegotiations (Reuer and Ariño, 2002; Ariño, Ragozzino and Reuer, 2008; Iriyama et al., 2014), the extent of reliance on formal and informal governance (Kim, 2013; Nicolaou et al., 2011), quality of relationships (Parkhe, 1993; Luo, 2009; Huu Le, Nguyen, Larimo and Ali, 2016; Hsieh et al., 2010; Luo, 2001; Baughn et al., 2011), knowledge transfer and learning (Simonin, 1999; Janowicz-Panjaitan and Noorderhaven, 2008; Reuer and Zollo, 2005; Lioukas and Reuer, 2015; Nielsen, 2007), performance, stability, and longevity (Luo, 2008; Luo, 1997; Rahman and

⁶ Social structure of interorganizational relationships can be studied from different perspectives: relational and structural ones. The structural perspective analyzes how the structural position of a firm in its network influences the alliance behavior of a firm, or how characteristics of an alliance's network influence an individual alliance. The relational perspective approaches interfirm networks in a different way. The level of analysis is usually a firm or a dyad. The question asked is whether social ties between partners have implications for an alliance. In other words, an alliance under investigation is analyzed without taking into consideration structural properties of the network in which it is embedded (Shenkar and Reuer, 2004: 118).

Korn, 2014; Nicolaou et al., 2011; Xia, 2011; Garcia-Canal et al., 2003; Rindfleisch, 2000; Hoang and Rothaermel, 2005; Nielsen, 2007; Zollo, Reuer, and Sing, 2002; Kim, 2011; Ozorhon, Ardit, Dikmenn, and Birgonul, 2008; Pangarkar and Klein, 2004). In these studies researchers used various theoretical perspectives to explain the effects of national culture and prior experience of working together. The way they were used is outlined below.

Prior mutual experience reduces the need for monitoring and facilitates mutual adjustment, and therefore, lowers coordination costs. Both mutual experience and working with partners from domestic markets remedies the adverse selection problem and the lack of reliable information about a partner. Domestic partners experience stronger negative consequences on their reputation of their opportunistic behavior. Thus, according to the transaction cost theory, problems associated with cultural distance and the lack of prior mutual experience heighten coordination costs and can be easier addressed by organizing economic transactions as equity rather than as contractual alliances.

While working together, partners can develop relational capital, which facilitates relation-specific investments, and therefore helps to create unique combinations of resources. Hence, according to the resource-based view, prior mutual experience can become a source of competitive advantage for an alliance.

According to the knowledge-based view, prior mutual experience strengthens partners' ability to absorb capabilities from each other and facilitates knowledge transfer. On the contrary, the lack of specific cultural expertise makes it more difficult to absorb knowledge routed in culturally different social contexts. It can prohibit the identification of market opportunities and understanding of market mechanisms (Simonin, 1999). On the other hand, the need to bridge differences in habitual ways of executing operational and administrative activities, and of interpreting and solving problems can result in new combinations of knowledge, and therefore provides competitive advantage.

Researchers in the alliance field also relied on ideas developed in social psychology; specifically, on attraction theories. According to these theories, people are more prone to be attracted by and trust to those who are more similar and more proximate (including geographically) (Orbuch and Sprecher in Delamater, 2006) because similarity and proximity facilitate understanding and interactions. Which characteristics and behavior should be considered attractive is dictated by institutional structures and norms of social contexts in which people participate. Thus, shared cultural background ensures that people emphasize and foster characteristics and behaviors that others also see desirable. The attraction theories were used to propose that similarity reduces

conflicts and facilitates trust development between alliance partners. The social exchange perspective as well as the reinforcement-affect theory used in the alliance field belong to the broad group of attraction theories.

The large number of empirical studies analyzing the effects of cultural distance and prior mutual experience clearly demonstrates the importance of these concepts. However, a growing volume of research has also revealed a number of problems. The first problem is the *divergence of empirical findings* (Shenkar, 2012). Although many empirical studies found evidence for the positive effect of mutual experience and the negative effect of cultural distance on performance (Luo, 2008; Rahman and Korn, 2014; Nicolaou et al., 2011; Xia, 2011; Garcia-Canal et al., 2003; Rindfleisch, 2000), the opposite effects (Ozorhon, Arditi, Dikmenn and Birgonul, 2008) as well as not significant findings (Saxton 1997; Garcia-Canal et al., 2003; Hoang and Rothaermel 2005; Nielsen, 2007; Zollo, Reuer and Sing, 2002; Kim and Parkhe, 2009) have also been obtained. Inconsistency in empirical findings has resulted in the inability to generalize the research findings on the effects of social structure characteristics on alliance outcomes.

The second problem regards *mediational mechanisms*. Although the theoretical perspectives used often do not differ in their predictions regarding the effects of cultural distance and mutual experience on alliance outcomes, they suggest different mechanisms through which these effects occur. Additionally, in empirical studies paths through which alliance social structural characteristics affect outcomes were often explained verbally rather than be tested empirically. Moreover, that a particular aspect of social structure can be related only to a particular characteristic of an alliance process has not been explored yet. That is, it is plausible that different social structure characteristics affect different aspects of an alliance processes and performance. These two problems – the empirical testing of mechanisms and the specificity of mechanisms – reflect a more general problem related to the lack of a conceptual framework for the relationships between alliance social structural characteristics, processes, and alliance outcomes.

The third problem is the *diversity of measurements*. The diversity of ways to measure cultural distance, mutual experience, and performance can affect the extent of the variability of empirical findings (Lu, 2007). Cultural distance has been measured in three different ways. Some researchers have focused on Kogut and Singh's index based on Hofstede's cultural dimensions, whereas others used perceived cultural distance or a simple dummy variable. Alliance performance has been measured in a number of domains (e.g., financial, overall, operational) and ways (e.g., stability, goal achievement) using subjective and objective indicators. It is unclear how these differences may affect empirical findings.

The fourth problem is *the lack of a unifying conceptual framework* for alliance social structure, process, and performance. Furthermore, scholars analyzed possible consequences of mutual experience and cultural distance independently from each other. Studying them together can facilitate a deeper understanding of the forces operating through these concepts.

To summarize, although determinants of strategic alliance performance have been of considerable interest to researchers over the last three decades, the role of social structural characteristics of alliances as well as interrelationships between them and process-related determinants of alliance performance has not received systematic attention. Scholars focused primarily on economic forces emanating from characteristic of partners, resources, a task, or a contract. Given the researchers' vivid interest in alliance process and performance, the lack of conceptual attention to alliance social structure is surprising.

The aim of our study is to theorize and verify (a) the effect of two alliance social structural characteristics – national cultural distance and prior mutual experience – on alliance outcomes, and (b) the role process characteristics can play in this relationship. We set out to do so by analyzing social, structural, and process-related characteristics through the prism of shared norms. Specifically, we do the following:

First, we suggested the utilization of a conceptual framework for bridging social characteristics and process dimensions with alliance outcomes. Second, we conducted a systematic quantitative review (a meta-analysis) (a) to identify at least some of the reasons for the contradictory empirical results and to explore the implication of the variety of constructs, and (b) to explore what specific process characteristics can transmit the effects of social structural characteristics on performance.

4.1.2. Previous Meta-Analytical Studies

We have identified three meta-analytical studies focusing on strategic alliances and including national cultural distance and/or mutual experience. Namely, Krishnan and Cunha (2005), Reus and Rotting (2009), and Li, Tian and Wan (2015).

Krishnan and Cunha (2005) focused on strategic alliances (both as equity and non-equity). They examined the relationships between alliance initial conditions (including national cultural distance and prior experience), governance structure, post-formation dynamics, and performance.

Reus and Rottig (2009) focused exclusively on international joint ventures and examined the influence of cultural distance (a combination of Kogut and Singh's composite index based on Hofstede's dimensions of cultural distance and other objective and subjective measures), hierarchical control, commitment, and partner conflict on performance.

Li, Tian, and Wan (2015) focused on Sino-foreign strategic alliances located in China. They meta-analyzed the relationships between a composite measure based on contextual distance, knowledge diversity, and performance. The results of the meta-analyses are summarized in Table 4-1.

Direct Relationships of Cultural Distance and Mutual Experience with Performance. Krishnan and Cunha (2005) did not hypothesize but calculated the direct effect of cultural distance and priorities on performance. Cultural distance was found to be negatively and significantly correlated with various measures of performance. Specifically, with composite $r = -0.09$, with economic $r = -0.10$, and with attainment of objectives $r = -0.11$. However, based on provided standard deviations of the mean corrected correlations we can conclude that the relationship *cultural distance – composite measure of performance* was heterogeneous with zero in credibility interval, which suggests the presence of moderators. Mutual experience was found to be positively and significantly associated with performance. Specifically, with composite $r = 0.30$, with economic $r = 0.21$, and with attainment of objectives $r = 0.31$. All relationships were homogenous. They did not test whether the measures of performance moderate the effect of cultural distance and mutual experience on performance. Neither did they analyze the implications of different ways to operationalize cultural distance.

Reus and Rottig (2009) did not hypothesize the direct effect of cultural distance on performance. However, in the meta-analytic correlation matrix they reported corresponding corrected correlation. They found that the effect is negative and significant but very low ($r = -0.03$), which can be caused by heterogeneity: its credibility interval contains zero. In search for moderating factors they have meta-analyzed separately subjective and objective measures of cultural distance as well as of performance. However, although some differences were found they did not test whether these are statistically significant. Thus, they found that only subjective measure of cultural distance had sizable negative effect ($r = -0.18$) on performance. Objective measures of cultural distance had weak effects. Specifically, Kogut and Singh's composite index of cultural distance had weak positive effect on performance $r = 0.04$, while measure of cultural distance based on other objective indicators had weak negative effect $r = -0.01$.

Table 4-1. Results of Previous Meta-Analytical Studies

Relationship	Krishnan and Cunha (2005) k=78 N=15,201	Reus and Rottig (2009) k=61 N=26,927	Li, Tian and Wan (2015) k=46 N=28,265
<i>Distance (cultural or contextual) → performance</i>			
→ performance	Not hypothesized	Not hypothesized	In low distance sub-sample: $r = 0.05^*$, 13(3,075), HET. In high distance sub-sample: $r = -0.01^*$, 20(1,595), HET.
→ goals	$r = -0.11^*$; 2(114)		In low distance sub-sample: $r = 0.06^*$. In high distance sub-sample: $r = -0.15^*$.
→ composite	$r = -0.09^*$; 9(1,146) 0 in CR	$r = -0.03^*$; 37(22,468)	Not tested
→ financial	$r = -0.10^*$; 3(1,311)		In low distance sub-sample: $r = 0.05^*$ In high distance sub-sample: $r = -0.05^*$
<i>Prior ties → performance</i>			
→ goals	$r = 0.31^*$, 4(522)	Not tested	Not tested
→ composite	$r = 0.30^*$, 9(1170)	Not tested	Not tested
→ financial	$r = 0.21^*$, 3(529)	Not tested	Not tested
<i>Distance (cultural or contextual) with</i>			
→ information exchange	$r = 0.08$; 4(581) Not hypothesized	Not tested	Not tested
→ cooperation	$r = 0.09$; 4(737) 0 in CR	$r = 0.15^*$; 2(279) Not hypothesized	Not tested
→ trust	$r = -0.35$; 2(249) Not hypothesized	Not tested	Not tested
→ conflict	Not tested	$r = 0.20^*$; 5(430)	Not tested
→ contractual safeguards	$r = 0.00$; 5(667) 0 in CR	Not tested	Not tested
→ hierarchical control	Not tested	$r = 0.02$; 13(4936) Not hypothesized	Not tested
→ knowledge diversity	Not tested	Not tested	$r = 0.08^*$; 9(1,526) 0 in CR
<i>Prior ties with</i>			
→ contractual safeguards	$r = 0.07^*$; 4(922)	Not tested	Not tested
→ information exchange	$r = -0.09^*$; 2(191)	Not tested	Not tested
→ cooperation	$r = 0.19$; 4(821) Not hypothesized	Not tested	Not tested
→ trust	$r = 0.24^*$; 4(499)	Not tested	Not tested

Note: * - statistically significant value, r - corrected correlation, k - number of studies meta-analyzed, N - total sample size, CR - credibility interval, HET - the relationship is heterogeneous.

As for the possible moderation by the type of performance measure, they have found that the relationship of *Kogut and Singh's index of cultural distance* with *objective measure of performance* was significant and negative ($r = -0.02$), while the *subjective measure of performance* was significant and positive ($r = 0.06$). Reus and Rotting (2009) used these findings to support the moderating role of performance measure. However, both these relationships were heterogeneous, pointing to the possible presence of other moderators and therefore a final conclusion is yet to be reached. Due to a lack of the studies, they could not test the moderating effect of performance measures for the relationship *subjective measure of cultural distance – performance*.

Also, depending on whether IJV was located in China, the relationship *Hofstede's measure of cultural distance – performance* was significantly negative or positive ($r = -0.04$ if located in China and $r = 0.05$ otherwise). Both relationships are heterogeneous and have zero in their credibility intervals. The relationship *subjective measure of cultural distance – performance* was negative in both subsamples ($r = -0.25$ if located in China and $r = -0.04$ otherwise), the last relationship was heterogeneous with 0 in credibility interval.

Li et al. (2015) analyzed contextual distance rather than national cultural distance. They pooled together various measures of cultural distance that have been used in primary studies included in their meta-analysis, such as *Kogut and Singh's index* based on Hofstede's dimensions, *subjective perceptual measure*, and *binary measure* (developed vs. developing countries), by transforming them into a binary measure of overall contextual distance. The transformation has been done in the following way. Samples from primary studies with a measure of distance equal to or above median value (or, at or above the midpoint) were classified as high contextual distance samples and others as low distance ones. The meta-analysis of the relationship *contextual distance - performance* has been done for each group separately. They have found a weak positive but significant relationship between contextual distance and performance in the low distance samples ($r = 0.05$), and a weak negative but significant relationship ($r = -0.01$) in the high distance samples. Based on the chi-square test for heterogeneity they have concluded that the magnitude of cultural distance moderates the *contextual distance - performance* relationship. However, this result should be taken with caution because both subgroups remain heterogeneous.

Additional meta-analyses for subgroups defined by measures of performance (goal performance and financial performance) provided similar results. For the relationship *contextual distance – financial performance* the correlations were $r = 0.05$ and $r = -0.05$ for low and high distance subsamples respectively, while for the relationship *contextual distance – goal performance* the correlations were $r = 0.06$ and $r = -0.15$ for low and high distance subsamples respectively. All

correlations were statistically significant. Here too, although the chi-square test for heterogeneity pointed to significant differences between low and high distance subgroups, the subgroups mainly remained heterogeneous, thus, further moderator analysis is needed before a final conclusion about moderating properties of the magnitude of cultural distance can be reached.

They also analyzed whether the length of operations (alliance age) and prior alliance experience (both with the partners from the focal alliance and other alliances) moderate the relationship *contextual distance – performance*. From the information reported in their study, for older alliances, the effect of contextual distance on performance was insignificant, and for younger alliances it was negative ($r = -0.07$). Each subgroup remained heterogeneous. No significant difference has been found between subgroups with more vs. less prior experience.

Indirect Relationships of Cultural Distance and Mutual Experience on Performance. Krishnan and Cunha (2005) suggested that cultural distance affects performance via two paths:

- 1) negatively via cooperation, and
- 2) positively via contractual safeguards (they further suggested positive paths from contractual safeguards to cooperation and performance).

Contrary to what was expected, they have found that cultural distance is positively related to cooperation ($r = 0.09$; $SD_p = 0.12$) and is not related to contractual safeguards ($r = 0.00$; $SD_p = 0.14$). From provided standard deviations of mean corrected correlations (SD_p) we can conclude that both correlations are heterogeneous with 0 in their credibility intervals which points to the presence of moderating factors. Thus, how cultural distance influences performance via these indirect paths depends on the context.

Krishnan and Cunha (2005) suggested that prior ties affect performance via following three paths:

- 1) positively via information exchange,
- 2) positively via trust (they further suggested that trust positively influences both information exchange and cooperation which in turn positively influences performance),
- 3) negatively via contractual safeguards (they further suggested that contractual safeguards are positively related to cooperation and performance).

Although not always in the way expected, all relationships have been found to be significant. Contrary to expectations, prior ties are negatively rather than positively related to information exchange ($r = -0.09$ and $SD_p = 0.00$ in the first path) and positively rather than negatively related to contractual safeguards ($r = 0.07$ and $SD_p = 0.00$ in the third path). As expected, prior ties are

positively related to trust ($r = 0.24$ and $SD_p = 0.00$ in the second path). From the provided SD_p we can conclude that these relationships are homogenous and therefore the suggested indirect paths from the prior ties to performance are supported, although not always as hypothesized.

Reus and Rotting (2005) hypothesized that cultural distance is positively related to conflict, which in turn is negatively related to performance. These hypotheses have been confirmed; they found that cultural distance is positively related to conflict ($r = 0.20$) and its indirect effect on performance is negative. Measure of cultural distance may affect the relationship *cultural distance – conflict*. It was found that *Kogut and Singh's index* of cultural distance is weaker related to conflict than a *subjective measure* of cultural distance ($r = 0.21$ and $r = 0.57$ respectively).

Li et al. (2015) hypothesized that contextual distance is positively related to knowledge diversity, which in turn influences performance. They found that the relationship is positive and significant ($r = 0.08$). However, from the reported statistics we can see that it is heterogeneous with 0 in credibility interval. They also found that knowledge diversity can be positively or negatively related to performance depending on the extent of knowledge diversity (for low knowledge diversity $r = 0.13$ and for high knowledge diversity $r = -0.05$; both are statistically significant) and that these relationships are further moderated. Thus, both the sign and the directionality of this indirect path is contextually dependent.

To summarize the findings of previous meta-analyses, the effect of cultural distance on performance reported in these meta-analyses was significant but weak. Moderator analyses performed in these studies suggest that when cultural distance is measured by subjective perception and when IJVs are located in China, the relationship *cultural distance – performance* is stronger. Other moderators (measures of performance, the magnitude of cultural distance, length of operations) have been suggested but no clear conclusion can be reached yet due to the likely presence of other moderators. It was found that cultural distance is related to conflict and cooperation, which in turn affects performance. It was found that cultural distance is related to performance indirectly via cooperation, conflict, and knowledge diversity; that contractual safeguards do not play any role in this relationship. As for mutual experience, one meta-analysis found that it influences performance positively. It also affects process characteristics such as information exchange (negatively) and trust (positively), which in turn affects performance.

Our study differs from these in the following respects:

1. We suggested the conceptual model for the effect of alliance social structural characteristics on its outcomes. It can accommodate social structural factors besides cultural distance and prior mutual experience.
2. We analyzed the relationships of national cultural distance and mutual experience with more process-related variables than Krishnan and Cunha (2005) and Reus and Rottig (2009) did. It allowed us to dig into the question of whether different characteristics of social structure are related to different process-related variables.
3. We included in our meta-analysis and moderator analysis more measures of cultural distance and performance in order to see whether the way these variables are measured matters.
4. We defined our unit of analysis broadly and included both equity and contractual alliances.

Our study is organized in the following way: First, we introduce the concept of norms and explain the understanding that currently exists in the alliance research of the role norms play in alliances. Then, based on the revision of the relevant socio-psychological literature we explain the theoretical underpinnings of norms and how they affect individual behavior. Next, we review social exchange and the institutional logic perspective and integrate them using the concept of norms. Next, we introduce the model and develop hypotheses about the effects of cultural distance and mutual experience on performance, and the mediation of these effects by factors describing alliance processes. Then, we describe the sample gathered from data collection, and the variables and moderating factors used in the meta-analysis. Finally, we report and discuss the results of meta-analysis that was conducted.

4.2. THEORY DEVELOPMENT

4.2.1. Strategic Alliances and Shared Norms

Through in-depth qualitative studies, researchers showed that the evolution of strategic alliances into trusting partnerships characterized by strong social capital and aiming at joint value maximization, results from interactions that are based on mutual adjustment, the ability to be guided by the goodwill rather than only by a contract, consideration for each other's goals, etc. Nevertheless, when the opposite type of interactions occurs where partners will strive to complete their individual and often diverging objectives, which will result in negative dynamics, deterioration, and eventual dissolution of the relationship (Ariño and de la Torre, 1998; Doz, 1996; Ring and Van de Ven, 1994). How do partners come to interact in one way or the other? Taking

into consideration that alliances have been conceptualized as social formations (Ring and Van de Ven, 1994; Muthusamy, White and Carr, 2007) it is possible that at least to some extent it can be explained by the rules and norms which partners chose to rely on (Varman and Costa, 2008) to manage their divergent interests.

The importance of social forces like shared norms for alliance governance has been highlighted by Williamson in 1979 when he described alliances as “a minisociety with a vast array of norms beyond those centered on the exchange and its immediate properties” (Williamson, 1979: 238). Also, Orton and Weick (1990) argued, “if organizations are determinate means-ends structures for attaining preferred outcomes, and if loose coupling is produced by uncertainties about these means-ends structures, then agreement about values and preferences is the only source of order that is left” (Luo, 2005: 697 refer to Orton and Weick, 1990: 212).

Alliance-specific relationship norms – which are part of informal relational governance in strategic alliances⁷ – are important for value creation (Dyer and Singh, 1998) and management of partners’ divergent interests as well as alliance coordination and adaptability to unforeseen circumstances (Zajac and Olsen, 1993). In an often complex and ambiguous environment, the absence of such *shared* rules impairs decision-making and progress toward the fulfillment of alliance goals (Muthusamy and White, 2006; Poppo and Zenger, 2002; Young-Ybarra and Wiersema, 1999). However, if a person succeeds in establishing a *shared* understanding of reality with another person, “they can trust the other’s view of things, allowing them to predicate their own judgments and actions” (Chiu, Gelfand, Yamagishi, Shteynberg and Wan, 2010: 2 refer to Echterhoff, Higgins, and Groll, 2005: 259). In strategic alliances, relational norms and attachment between partners may perform the role of safeguards when it comes to undertaking specific investments or sharing sensitive knowledge (Ali and Larimo, 2016). Shared norms ensure that actors “have an expectation *ex ante* of the criteria by which they would determine what was an appropriate or equitable fulfillment of exchange” (Blois, 2002: 525), which is a crucial condition for cooperative behavior (Ring and Van de Ven, 1994). Therefore, better understanding of how partners develop shared rules and norms can help to understand relationships between partners better (Salk and Shenkar, 2001).

Alliance Performance and Shared Norms. Institutions and norms that characterize various social contexts in which alliance partners are embedded inform partners about appropriate ways to engage

⁷ Dyer and Singh (1998) describe relational governance as consisting of formal (e.g., mutual hostages) and informal (e.g., trust) dimensions.

in interactions. These social contexts include (but are not limited to) partners' national cultures, a community developed through working together previously or a community emerging in an ongoing alliance. The institutions governing a specific context determine how costs and benefits should be distributed between actors encountering themselves in the specific context (Thornton, Ocasio and Lounsbury, 2012). Therefore, the ability to rely on *shared* social norms – both acquired from wider social context and developed during cooperation – permits partners to reduce the costs of their exchange and/or increase rewards. This in turn affects the difference between the potential and the realized value of an alliance (Madhok and Tallman, 1998) and thus alliance performance. Relational norms developed in the process of collaboration safeguard against opportunism and permit partners to make investments that would not be possible in the absence of such norms (Zajac and Olsen, 1993). A shared understanding of the appropriate form of behavior acceptable for all partners is important for the continuity of an alliance and its outcomes (Parnell and Hatem, 1999). Attachment and trust that develop between partners as a result of sticking to relational norms may become a reward in its own right (Ring and Van de Ven, 1994).

Alliance Process and Shared Norms. Norms underlie or are related to a number of concepts, such as identity, equity, psychological contract, trust, relational capital, etc., which are essential for describing an informal alliance/social process. Informal and formal processes describe relationships between partners and are intertwined and mutually enable each other (Ring and Van de Ven 1994).

Ring and Van de Ven (1994) described the informal/social dimension of the alliance process in the following way: In order to commit to uncertain future courses of actions, while performing formal tasks partners repeatedly engage in various informal processes. The first informal process is sensemaking. It allows partners to bridge their initially different perspectives on the collaborative project. In the process of sensemaking they clarify their own and partner's identities, which includes their vision of the way they relate to each other and to the environment. If this vision is shared, it enables partners to undertake congruent actions with respect to an alliance project. Shared vision emerges gradually while partners validate their own understanding and interpretations of each other's actions through social interactions. This is the second informal process: understanding. More generally, in this process a psychological contract is formed, which in addition to identity includes expectations about norms, work roles, security, social relationships, etc. Through repetitive execution, these identities, missions, and ways to maintain a relationship may eventually become second nature or institutionalized and partners will increasingly rely on them to govern the alliance.

Thus, identity is a bedrock of relationship development. Researchers in the strategic alliances field

draw insights from the identity research in social psychology. Broadly, identity can be defined as the “categories people use to specify who they are and to locate themselves relative to other people” (Michener and Delamater, 1999 in Delamater, 2006: 207). The collective dimension of it comprises shared definitions produced by a number of individuals regarding the actions and conditions under which they should occur (Melucci, 1989 in Delamater, 2006). It was shown that identity normatively affects behavior and explains intergroup conflict and competition (Delamater, 2006). Similarly, in the strategic alliances field it has been shown that it determines “the motivational and cognitive predispositions of individuals”, that is, their willingness and ability “to engage in sensemaking and bonding processes” (Ring and Van de Ven, 1994: 99), thereby influencing partners’ ability to bridge their initially different individual interests. If partners can reduce differences associated with their identities and develop a shared alliance identity, they will reduce problems related to coordination control/monitoring.

Identity forms part of the psychological contract. The concept of a psychological contract as it is used in the alliance literature refers to partners’ shared understanding of each other’s prerogatives and obligations; it includes both material and emotional aspects and is considered to be an integral part of social exchange relationships developing between partners. The psychological contract is created through sensemaking and bonding processes as well as can be based on partners past experiences (Ring and Van de Ven, 1994) and personal values. As a result of social integration and of institutionalization, identities, objectives, expectations, and processes can become more fluid and partners can achieve a congruent understanding of common external order regarding their social relationships (Ring and Van de Ven, 1994).

Equity principle is a necessary condition for the continuity of social exchange; it moderates partners’ self interests and makes transaction-specific investments possible (Ring and Van de Ven, 1994). Equity reduces behavioral uncertainty in alliances, provides partners with flexibility when it is necessary to adapt to changing circumstances, as well as provides additional basis for conflict resolution. Equity is also related to the development of trust, which is understood to be a confidence in one’s partner’s goodwill as a result of repeated fulfillment of expectations embedded in the psychological contract (Ring and Van de Ven, 1994).

Alliance Social Structure and Shared Norms. Both national culture and the prior experience of working together represent social contexts in which partners are embedded. These social contexts are characterized by values, roles and specific relationships between members occupying different positions, institutionalized working procedures and norms, which may influence the behavior of the parties in the ongoing alliance and its performance. This influence may be especially important

during the early stages of collaboration: since identities and relational norms specific to the ongoing alliance have not yet been developed, partners have to rely on other available norms. Necessary norms can be cued from prior alliances or from general beliefs about how transactions are typically done in the partner's national culture.

Prior relationships provide partners opportunities to engage in sense-making activities, verify each other's identities, learn about each other's way of working, and even develop personal bonds and trust. Prior relationships facilitate the development of new relationships (Ring and Van de Ven, 1994). On the contrary, national cultural differences can block both sensemaking activities and shared identity construction in the ongoing alliance. Thus, Ring and Van de Ven (1994) observed that partners usually rely on formal roles until personal relationships are developed in the ongoing alliance. Formal role relationships facilitate interactions and sensemaking by increasing predictability and the interpretability of behavior. The formal roles are a part of organizational practices, which emanate from the institutions of society (Child and Heavens, 2003) and therefore differ across cultures. On the other hand, in the social psychology it has been observed that perceived similarity and shared goals affect identification within a group (Turner, 1987). Therefore, since priorities and ways to achieve objectives differ across countries, differences in national cultures can impede construction of shared alliance identity. For example, Salk and Shenkar (2001) have observed that "[i]n-group preferences and out-group discrimination between subgroups based on national origins can persist despite the convergence of shared work norms" (Salk and Brannen, 2001).

4.2.2. Norms

Concepts that are used to describe informal processes in alliances are strongly related to norms. Therefore, it would be worth looking more in detail at what norms are. A norm is a social actor's understanding of/belief about an acceptable and/or expected way of interpreting events and doing things in given circumstances, which sometimes may be supported by social consequences – i.e. some kind of punishment or reward, e.g. social approval or disapproval (Gibbs, 1965; Opp, 2001; Ott and Ivens, 2009) and generally can be seen as a cultural product (Varman, 2008). It follows that norms can have elements of *a collective evaluation* (i.e. belief in how one ought to/ought not to behave) and/or *a collective expectation* (i.e. predictions regarding what people typically do, their real practices), and that they are usually tied to a specific context (Lempert, 1972), and there is a possibility of *reaction* to a behavior (Gibbs, 1965; Opp, 2001).

A collective evaluation or “ought to” type of norm is also referred to as an injunctive norm, while a collective expectation type of norm is referred to as a descriptive or intersubjective norm. It has been observed that descriptive norms sometimes are not in agreement with injunctive norms. That is, what individuals actually do does not always correspond to what they should do⁸ (Eom and Kim, 2015). The role of a situation in determining what norm will become salient should be taken into consideration. Although norms are almost always stated in very general way, they are usually associated with specific conditions which should occur in order to elicit the normative behavior. Only if an individual has recognized the conditions for the norm, will he behave accordingly (Lempert, 1972).

Norms can emerge in and affect direct individual and organizational actors’ behavior in one of two general ways. First, in goal-directed interactions between actors, social norms are constructed naturally when social actors *jointly* develop interpretations of important matters and act routinely in accordance to these interpretations (Strang and Sine in Baum, 2002). Since actors are aware of the norms and corresponding outcomes, they use norms *instrumentally* for achieving their specific goals. Instrumentality is also illustrated by norms established by a group to maximize aggregate group welfare (e.g. public goods such as the reduction of pollution or common gains in business). This in turn leads to the realization of the individual goals of the group members, or by norms restricting the group members’ opportunities for competitive behavior given that it is important for the group members to preserve good personal relationships (Opp, 2001). Thus, in goal-directed interactions norms emerge (Opp, 2001) to *indicate acceptable and expected ways to achieve a goal*.

Even when some actors are not aware of the norms, their behavior nevertheless can be guided by norms via *social feedback*. That is, when individuals are engaged in everyday social interactions they perceive the social approval or disapproval (both verbal and non-verbal) of their behavior. As a result of this feedback, individuals modify their behavior even if they are not aware of a specific social norm (Eom and Kim, 2015).

Actors also can strategically decide to behave in a certain way corresponding to the behavioral normative responses of others (Chiu et al., 2010). Given that all parties in the relationship have homogenous goals and a similar understanding of the norms and behaviors leading to the achievement of these goals, they will respond by acting in accordance with the appropriate norm

⁸ The extent to which descriptive and injunctive norms overlap may differ from culture to culture (Eom and Kim, 2015). It can be a reason for the insignificant effects of Hofstede’s measure of national cultural distance, since this measure mixes descriptive and injunctive norms.

(Opp, 2001). One of the reasons why actors behave consistently with norms is the need for the reduction of uncertainty. The need for uncertainty reduction activates the need for group identification, which forces an actor to follow descriptive norms (Gelfand and Harrington, 2015). Descriptive norms are readily available cultural knowledge, which may help with information processing in situations of ambiguity and high cognitive load.

Second, actors may behave consistently with a norm because the personal values they hold are an incentive in its own right; they also may want to gain/preserve membership in a certain social group. That is, there is an absence of a causal link between normative behavior (i.e., compliance with the norm) and the outcomes intended by the norm (Opp, 2001).

4.2.3. The Concept of Norm in Selected Theoretical Frameworks

Shared norms can emerge both in the process of collaboration as well as be adopted from wider contexts such as previous partnerships or national cultures (Varman, 2008). Two theoretical perspectives – the social exchange perspective and institutional analysis – rely on the concept of norm for describing the interaction between actors, and have been used to explain alliance partners' behavior.

Social Exchange Perspective

Levine and White (1961: 588) define organizational exchange as “any voluntary activity between two organizations which has consequences, actual or anticipated, for the realization of their respective goals or objectives”. How independent actors engage in and maintain a relationship that extends to an uncertain future without the possibility of writing complete contracts that regulate the relationship is a central question of social exchange theory. Social exchange theorists answered this question by shifting the focus from explaining a discrete exchange to studying a relationship as constituted by a sequence of interdependent exchanges (Emerson, 1976). Nevertheless, the social exchange theory is not specifically about alliances, however, it can be applied to relationships between alliance partners because the interactions between them can be conceptualized as a sequence of interdependent exchanges that are governed by open-ended relational contracts (Ring and Van de Ven, 1994; Muthusamy, White and Carr, 2007).

Scholars observed that in a series of interdependent exchanges, the quality of fulfillment of an exchange that has happened earlier in time affects the quality of later exchanges (Cropanzano and Mitchel, 2005). In the process of repeated exchanges the meaning of the situation and messages

about how the partner to the exchange is treated are created, each action lays the foundation for future action (Emerson, 1976; Cropanzano and Mitchell, 2005). As partners evaluate what they receive from their counterpart, they also adjust their behavior to balance what they give out with what they receive (Isidor, Schwens, Hornung and Kabst, 2015). In this process of giving, receiving, and adjusting, over time they arrive at a mutual understanding of the rules as to how they agree to exchange social and economic benefits. Together with economic benefits, social benefits are part of an exchange. Social benefits such as identity and presentation of self in social situations can be considered commodities that can be gained or lost in the process of social interaction (Emerson, 1976). Exchange relationships can be maintained solely due to the rewards exchanged by the parties (Lempert, 1972). Despite the fact that partners maintain the ability to control the outcomes (Reis, 2008), regularly repeated actions eventually become transformed into rules which reflects “the transition from strategic interaction to normatively regulated exchange” (Emerson, 1976: 355).

An exchange rule is “a normative definition of the situation that forms among or is adopted by the participants of an exchange relation” (Meeker, 1971). In other words, this is a general principle which guides partners’ actions/decisions in situations when these actions/decisions – which are not directly regulated in a contract – affect the benefits and costs of the counterpart. The objectives underlying the norms of relational exchange are the maintenance of partners’ goal interdependence, the expectation of continuity⁹, and the wellbeing of the relationship as a whole (Blois, 2002). The relational contracting literature sheds some light on the types of norms important for relational exchange. They include but are not limited to rationality, group-gain, competition, status consistency, and altruism (Meeker, 1971). In the alliance field researchers have observed some of these types of norms. For example, if in each exchange episode partners build solidarity and preserve it in subsequent episodes, then “in longitudinal relations – if parties enjoy the balance of power – equity and even a touch of altruism as exchange rules” emerge (Emerson, 1976: 354). The most frequently analyzed exchange rule is reciprocity, probably because it is considered to be a universal rule that exists in all cultures (Emerson, 1976). If partners follow this rule, then over time the repeated exchanges will evolve into high quality relationships characterized by trust, loyalty, mutual commitment, close interpersonal ties, etc. (Cropanzano and Mitchell, 2005). Altruism manifests itself when one partner forgoes an opportunity to benefit at the expense of another partner. Learning races (Hamel, 1991) are one example of adopting a competition principle as exchange rule.

⁹ In the relational exchange theory, the expectation of continuity (or future dealings among individuals who participate in exchange) seems to be a constituent of the ‘contract’ (Ott and Ivens, 2009).

Although the social exchange theory is not very explicit about how exchange rules emerge, it nevertheless provides some general indications. First, exchange rules emerge in *the process of interdependent interactions*. Second, exchange rules are affected by emergent or *developmental attributes* of social exchange relations (Emerson, 1976). Also, Meeker (1971) argues that which rule will be chosen depends on a partner's definition of the social relationship they have with each other. Emerson (1976) provides an example when mutually rewarding relationships lead to the emergence of interpersonal attraction – a developmental attribute of the relationship – which eventually leads to changes in the exchange rate. That is, in this example, first, new valued social benefit and a developmental attribute of the relationship – attraction – emerges; second, partners may revise the exchange rule used, for example, move from a rational to a group-gain principle. To develop long-term trusting relationships from the series of interdependent transactions, parties should take care of each other (Cropanzano and Mitchell, 2005). That is, developmental attributes result from actions partners take in the process of collaboration. However, the process determinants of exchange rules have not been systematically explored in the social exchange perspective (Emerson, 1976: 353; Cropanzano and Mitchell, 2005). Thus, the following question arises: Apart from interpersonal attraction, developmental attributes of interactions, what are the determinants of exchange rules? Developmental attributes of interactions emerge while partners perform a variety of activities related to their tasks. Therefore, to answer the above stated question, it can be useful to understand the content of the alliance process, i.e. the different types of activities involved in it.

The Alliance Process¹⁰ and Developmental Attributes of Interactions

The alliance process can be defined as the series of actions and reactions that take place between partnering firms as the alliance moves forward (Lui and Ngo, 2005). Factors constituting the alliance process are not well categorized. The literature on team processes may help to do so and to identify the developmental attributes of the interactions. In a recent review of this literature, Mathieu and his colleagues (2008) define teams as “collectives who exist to perform organizationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies, maintain and manage boundaries, and are embedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in the

¹⁰ We want to be clear that the theory of the process underlying our research effort falls into the teleology category – that is, that alliance development is explained in terms of movement toward some final goal, with management acting as the agent to reach that goal – and it focuses on the operational stage of the alliance life cycle (see Van de Ven, 1992; and de Rond and Bouchikhi, 2004).

broader entity”. Thought of as collectives of firms, alliances fit this definition of teams, and in what follows we adapt team process categories to the alliance context.¹¹

Alliance processes describe “[partners’] interactions directed toward task accomplishment” (see Mathieu et al., 2008: 412). Out of three high-level process categories that have been identified – action, transition, and interpersonal processes (Marks et al., 2001) – the latter is directly relevant to our study. *Interpersonal processes* occur through interactions that happen while an alliance moves towards the accomplishment of its objectives, and they reflect “[alliance] activities that are focused on the management of interpersonal relationships” (Lepine et al., 2008: 276). They “lay the foundation for the effectiveness of other processes” (Marks et al., 2001: 368).

Interpersonal processes include activities directed at conflict management, generating and preserving the sense of collective confidence, and goal cohesion among others (Marks et al., 2001) and become reflected in the quality/valence of partners’ actions. In an alliance context these processes happen while partners engage in actions and interactions needed to perform an alliance’s tasks and become reflected in their quality. For example, the quality of information exchange can reduce uncertainty related to partners’ behavior and the task, i.e., whether tasks are executed as agreed and in a way that does not conflict with the objectives of the counterpart. Since the quality of information exchange can be relatively easily regulated unilaterally, timeliness, richness and the completeness of the provided information manifests a partner’s attitudes towards an alliance and another partner. The frequency and severity of disagreements reflects the extent of reliance on tactics for conflict resolution that encourage accounting for the position of a counterpart. Commitment to an alliance and a partner demonstrated via the willingness to adjust to a counterpart may bring about the absence of opportunistic intentions, non-competition, and long-term orientation. It enhances the sense of collectiveness and cohesion.

Processes result in the *emergent states* (e.g., affect, cohesion, trust). Emergent states refer to “properties of the [alliance] that are typically dynamic in nature and vary as a function of [alliance] context, inputs, processes and outcomes (Cohen and Bailey, 1997). They describe cognitive, motivational, and affective states of [alliances], as opposed to the nature of their [partner] interaction” (Marks et al., 2001: 357-8).

Thus, both the quality of actions and interaction and emergent states can be considered to be developmental attributes that emerge during activities directed at planning and executing alliance

¹¹ In the next paragraphs, the original wording has been adapted by substituting “alliance” for “team,” and “partners” for “team members”.

related tasks. These developmental attributes affect the exchange by shaping the definition of a situation and, therefore, an exchange ratio that partners perceive as fair. In the alliance field, frequently studied characteristics of alliance process and partners' behavior that can be considered developmental characteristics are cooperation (Luo, 2002), commitment, mutual adjustment, and trust (Dyer and Singh, 1998; Ali and Larimo, 2016), quality of communication (Ali and Larimo, 2016), and perception of justice (Luo, 2007), among others. Researchers view the quality of interactions as well as emergent states as indicators of exchange rules and relational norms, and do not conceptualize and measure these rules per se. Such indicators of exchange rules as trust, cooperation, opportunism, and conflict among others have been frequently studied (Luo, 2002; Bounchken, Clauß and Fredrich, 2016; Ali and Larimo, 2016). Therefore, these indicators can be used in our research.

Thus, the quality of partners' actions and interactions as well as the related emerging cognitive, motivational and affective states can shape the definition of the situation and exchange rules applied by partners. However, can exchange rules as well as developmental attributes themselves be influenced by factors external to an alliance process?

Besides being influenced by developmental attributes of relationships, what are other possible antecedents of exchange rules? Or, put differently, can developmental attributes be influenced by factors external to alliance process?

According to several social exchange theorists exchange rules can also be predicted from more general values, e.g. cultural values (Cropanzano and Mitchel, 2005 refer to Benedict (1935) and Mead (1937); Lempert, 1972). In sociology Opp (2001: 124) suggests that it is plausible that "the emergence of a norm is influenced by existing norms, value systems and by the extant culture." In other words, norms are "path dependent". However, the social exchange perspective is not explicit about the influence of the broader cultural environment on exchange rules. Thus, institutional analysis and especially its institutional logics branch may be useful for understanding whether the developmental attributes of relationships are influenced by the broader cultural environment.

Institutional Analysis

How societal institutions and an individual or organizational actors are interrelated is one of the broad array of questions studied in institutional analysis (Palmer and Biggart in Baum, 2002). Institutions have been defined as shared by social actors, taken for granted meanings, practices, and procedures (Pfeffer, 1982). Institutional frameworks in which interorganizational relationships are

embedded are infused with social meaning “beyond the technical requirements of the task at hand” (Strang and Sine in Baum (2002) refer to Selznick (1957): 17) and may be the source of rules and norms (Strang and Sine in Baum, 2002) especially at the initial stages of collaboration. Institutions can influence behavior through a number of carriers (Scott, 1995), one of which is culture¹² (Elsbach in Baum, 2002; Scott, 1995). In the Blackwell Dictionary of Sociology, cultural values are defined as “a shared idea about how something is ranked in terms of relative social desirability” (p. 339). Cultural values are supported by norms, which specify what behavior is appropriate and attach sanctions to alternative behavior.

Although with a high level of generalization, it is agreed that institutions influence individual and organizational behavior, and that institutional theories differ substantially in the ways they view these interrelationships. Thus, the earliest institutional analysis (old institutionalism) did not include culture in the analysis at all; the main focus was on how state and regulatory bodies influence the behavior of individuals and organizations. In the new institutional theory, the role of culture has been captured through such institutions as schemas, habits, and routines. Schemas, habits, and routines are based on shared values, meanings, and understanding of the appropriate ways of acting in specific situations. Behavior is understood as embedded in these institutions. Individual and organizational actors are bound to rely on institutions (schemas, habits, and routines) due to the limits in their cognitive abilities and uncertainty. Even more, institutions reflect “social” reality constructed by people and are perceived by them as facts. Existence of such shared social reality allows for the increasing predictability of others’ actions and to improve coordination. The way in which these institutions can be changed is not clearly specified in the new institutional theory. It has been suggested that a crisis or a disruptive event can lead to change, but unless it occurs, individuals and organizations are bound to be guided by these institutions.

A different view of the interrelationships between institutions, and individual and organizational actors is provided by the institutional logics perspective, which has originated from the new institutional theory. According to the institutional logics perspective, culture is not homogenous, as it is assumed in new institutionalism, rather it is composed of various cultural subsystems or institutional orders, e.g., nation, market, corporation, community, etc. (Thornton, Ocasio and Lounsbury, 2012: 44 refer to Friendland and Alford, 1991). Each order can be described by unique institutional logic, which is defined as socially constructed symbols (ideas and meanings), organizing principles and practices, values and beliefs, which individuals use to provide meaning to

¹² Not all institutional theorists consider that culture is an institution. However, when culture is conceptualized as taken for granted rationalized beliefs and practices it can be considered to be such an institution (Elsbach in Baum, 2002).

their daily activities and experiences (Thornton et al., 2012: 2). It also determines what behavior is rational, i.e. “rational behavior differ by institutional order” (Thornton et al., 2012: 26).

Thus, individuals and organizations hold a repertoire of symbols, values, and practices specific to a variety of institutional orders, in which they are embedded to different extents. In each specific situation, individuals and organizations choose to apply an institutional logic, which they perceive as the most adequate for a given situation. The novelty of the institutional logics perspective is that it is precisely individual and organizational actors who “conceptualize” a situation (Thornton et al., 2012: 7), i.e. decide which order fits and should be relied on in a specific situation.

The choice of institutional order depends on a number of factors. The first factor is the salient characteristics of a situation. Although any situation can be described by means of many characteristics, individual or organizational actors initially pay attention to / notice only those characteristics that belong to an institutional order that they routinely apply in similar situations, i.e. to a dominant institutional order. Thus, actors look at the situation through the prism of only those identities, goals, expectations, and schemas that are specific to the institutional order they usually apply. If these fit the situation, actors will rely on learned routinized behavior prescribed by the corresponding dominant institutional order. The described scenario is a manifestation of the constraining nature of institutions leading to actors’ automatic (or embedded) behavior.

However, other characteristics of a situation, apart from those emphasized by the dominant institutional order, may become salient too. Situations where unexpected actions or outcomes, which are incongruent with the prevailing institutional logic occur or situations where another actor explicitly focuses on different situational aspects, stimulate a search for additional characteristics of a situation that may account for incongruences and that are not embraced by the routinely applied institutional order. These are so-called non-routine situations. Non-routine situations trigger actors’ controlled attention, and actors can notice new situational characteristics and include them in sense- and decision-making and which can eventually lead them to re-conceptualize the situation. As a result of this sense-making and re-conceptualization, alternative institutional logics can be activated and applied. When actors choose deliberately which logic (or a combination of logics) to follow, the enabling nature of institutions is manifested. Not only can actors choose to apply one or another logic, but they also can modify them by segregating and combining their elements through “transposing logics common in one institutional order to new contexts” (Thornton et al., 2012: 118), e.g. market with corporation, religion and corporation, etc. When the situation repeats itself over long enough period of time, the novel institutional logic may become more easily evoked without the need for controlled attention.

Another factor which can influence the choice of institutional order is social interactions. Social interactions between two or more actors are defined as “both material and symbolic interactions in which negotiations and exchanges as well as communications are central” (Thornton et al., 2012: 93). According to the institutional logics perspective, such situations are non-routine situations and require controlled rather than automatic attention to the choice of behavior (Thornton et al., 2012). In the process of social interactions, parties can observe the actions of each other and verify each other’s identities, a meaning each of them gives to the situation and expectations (Reis, 2008). These expectations and characteristics of the relationship that previously had not been noticed may become salient during these interactions. As a result, partners may want to modify each other’s behavior either by openly negotiating adjustment or through social feedback. Through negotiations and feedback actors can arrive at a shared understanding of the situation. The degree of cooperativeness and competitiveness will determine the order.

How does the institutional logics perspective contribute to the understanding of exchange rules and the alliance process? Alliances are governed by open-ended relational contracts. Therefore non-routine situations are not entirely regulated in a formal contract, unexpected outcomes, behaviors, or environmental changes happen often, and partners frequently have to openly negotiate acceptable behavior. According to the institutional logics perspective, the norms/rules partners will rely upon in the course of their collaboration is affected by an institutional order each of them thinks is appropriate in a given situation, which in turn is affected, among other factors, by the dominant institutional orders they apply in situations similar to the focal one as well as by the salient characteristics brought to their attention in the process of social interactions.

If partners apply the same institutional order to the focal situation, they will follow similar logics and will rely on similar outcome distribution rules, which will reduce behavioral uncertainty. In such situations, partners will interpret each other’s actions correctly because these actions are based on the same logic. If a partner’s actions are not close enough to what is expected by the other partner, they can negotiate mutual adjustment explicitly or via feedback. Although some disagreements may occur, the fact that the same principles and values guide partners’ behavior, should help them to overcome disagreements. Besides, consensus on intersubjective perceptions induces trust and conformity (Chiu, Gelfand, Yamagishi, Shteynberg and Wan, 2010). Even in the case of mutually non-cooperative behavior (i.e. when both partners choose to compete or to follow the private gain maximization principle), partners can recognize the situation correctly, which will allow them to adjust the scope of their project accordingly and adopt appropriate safeguards to reduce risks.

However, if the meanings partners give to the focal situation are different, behavioral uncertainty will be high, partners will misinterpret each other's actions, and mutual expectations will not be fulfilled. Additionally, it will be difficult to reach agreement during negotiations because of the differences in the partners' values and priorities. Conflicts will follow. A partner, especially the one that feels disadvantaged, may try to correct/control the situation by unilaterally adjusting the quality of commitment and by restricting information exchanged.

Among other factors, national culture and previous collaborative experience can affect the ability of partners to come to an agreement about appropriate institutional order.

National Culture. Culture can be defined at different levels. At the supra-individual level, culture is usually understood to be internalized values or beliefs (Chiu, Gelfand, Yamagishi, Shteynberg and Wan, 2010: 6). When contemplated from the institutional logics perspective, this definition needs to be adjusted for the heterogeneity of culture: a repertoire of values and beliefs specific to various institutional orders co-existing in the culture out of which actors can choose (i.e., the values are not internalized) those that they perceive as the most appropriate in a focal situation. At the intersubjective level¹³, culture can be seen as an individual's perceptions of intersubjective reality in their sociocultural context, or put differently as the "shared perceptions of the psychological characteristics that are widespread within a culture" (Chiu et al., 2010). In research, national culture is used as a proxy for managers' individual cognition (Kogut and Singh, 1988). Culture also influences how participants interpret a social situation: "situations have little or no objective meaning outside of the meaning systems that culture provides¹⁴" (Reis, 2008; Hofstede, 1993). According to the institutional logics perspective, actors that are embedded in different cultures or institutional logics will *activate different identities, goals, and schemas even when confronted with the same situation*. "Conflicts in identities, goals, and schemas serve as barriers to cooperation and generate power struggle in social interactions" (Thornton et al., 2012: 94). For example, different nationalities have different propensities to compete or to cooperate (Meeker, 1971). In line with this argument, Gelfand and Harrington (2015) found that interaction with individuals of the same nationality was conducive to the activation of culturally specific descriptive norms, i.e. norms that

¹³ Intersubjective culture reflects real behavior that happens in practice and how things *are*, rather than what should happen and how they *should be* (Chiu et al., 2010). If so, then the differences in intersubjective cultures should be better reflected by a perceptual measure of cultural differences than by Kogut and Singh's index based on Hofstede's dimensions, since the latter mixes the "ought to" and "what is actually done" norms. People use intersubjective knowledge to advocate their behavioral choices, especially in situations when they need firm answers, or, when they feel accountable for their actions, and to coordinate perspectives in social interactions (Chiu et al., 2010). Thus, we expect that the perceived measure of cultural distance will be more informative for our analysis.

¹⁴ Reis summarized the social constructivists' perspective.

describe how people usually behave in a specific situation. In another experimental study, Liu, Friedman, and Hong (2012) found that the “[c]hinese were more cooperative when interacting with in-group members, particularly under high accountability” (Gelfand and Harrington, 2015: 1275). Thus, allying with domestic partners makes the choice/agreement on appropriate behavior easier. However, since culture is heterogeneous and is composed of various institutional orders that can be applied in the alliance context (e.g. *institutional orders*: corporation, market, community; *exchange rules*: rationality, competition, group gain, altruism, etc.), the choice of the same behavioral norm will be possible only when agreement on the applicable institutional order is previously reached. Thus, given that partners have agreed on institutional order, cultural similarity makes it more probable that they will rely on the same norms. It has also been found that the same values may be supported by different descriptive norms in different cultures. It follows that when partners have different cultural backgrounds (different nationalities), they may differ in their understanding of the norms appropriate for goal achievement, even if these goals are shared. It leads to additional difficulties.

To summarize, national culture similarity will guarantee that the same behavioral routines are used only if partners agree on the order they apply to the situation. Difference in national cultures will result in behavioral routine differences, in addition to a difference in values. It will magnify the difficulties in achieving a shared understanding of alliance goals and appropriate ways to achieve them.

Mutual Experience. When partners have prior experience of working together, the order that they relied on in their previous collaborative project may be more relevant for a focal alliance and more easily activated than sorting through the entire range of potentially applicable orders. Prior strategic alliances between partners can lead to the development of specific interorganizational routines and roles (Stinchcombe, 1965: 148). These routines and roles among other factors can be considered constitutive of an alliance-specific order. In prior collaborations, partners may develop alliance-related identities that will facilitate positive in-group (alliance) attitudes. In previous collaborations partners learn about each other’s cultures and have the opportunity to verify the range of identities and schemas each one has in his/her repertoire, and learn which partner dominates in different situations that require mutual adjustment. “As firms enter into successive collaborative agreements with each other, partners develop a better understanding of each other’s procedures, management systems, cultures, and so forth (Dyer and Singh, 1998). Dyer and Singh (1998) similarly suggest that the relationship-specific knowledge that develops from frequent and intense partner interactions builds a firm’s relational capabilities, which can enhance the efficiency of alliances”

(Reuer and Ariño, 2007). Moreover, the institutional order and the logic customized to their (previous) project could become routine (Ring and Van de Ven, 1994).

The logic developed for new project does not have to replicate the old one, because the priorities of the project and of partner companies may change, but it is reasonable to think that some elements of the previous logic can be re-used. For example, if community logic has been developed in previous collaborations, which implies reliance on trust, reciprocity, and a reputation for honoring commitments, it can be easier and can take less time to replicate these features in the subsequent collaboration than to develop them from scratch in a first-time alliance. More generally Reuer and Ariño (2007) explain “[p]rior strategic alliances between firms can lead to the development of interorganizational routines, roles, decision criteria, communication channels, “devices for smoothing over persistent sources of tension and conflict” (Stinchcombe, 1965: 148), that can allow firms to avoid the costs of detailing—mechanisms for monitoring and coordination (Zollo, Reuer and Singh, 2002)”.

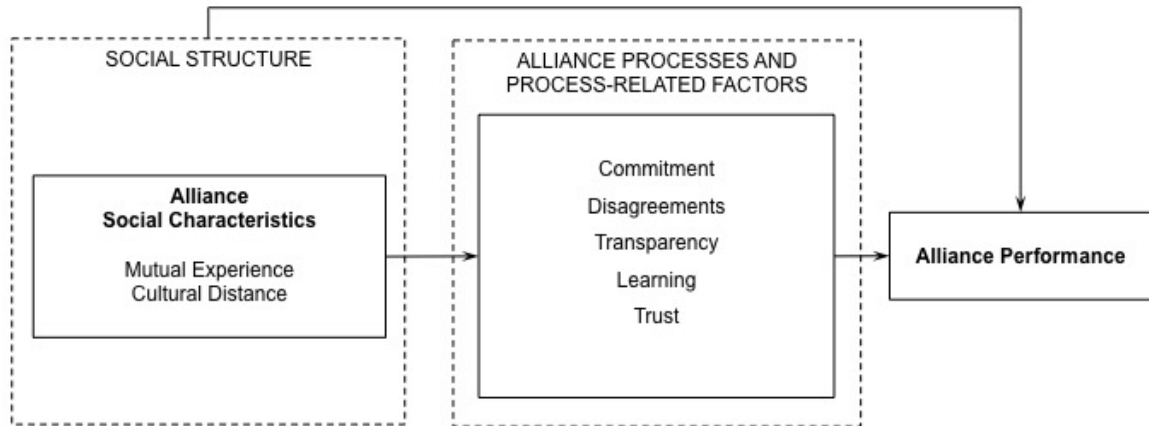
All together, previous experience of working together is likely to help partners to come up with a shared institutional order for a new project faster because it provides building blocks for new institutional order. However, re-used elements of “old” logics will need to be verified again through social interactions.

4.2.4. The Model: Social Structure, Process and Performance

While many studies analyze the effect of cultural distance and mutual experience on different process-related factors and performance, none of them systematically analyzed the mediating role of process-related factors all together (Reus and Rotting, 2009; Krishnan and Cunha, 2005). In this study, we analyze how social structure and process-related determinants of alliance performance are interrelated.

To articulate these relationships, we build on social exchange and the institutional logics perspectives which led us to formulate the following hypotheses describing relationships between 1) cultural distance, process-related factors, and performance and 2) mutual experience, process-related factors, and performance (see Figure 4-1).

Figure 4-1. Relationships Between Alliance Social Structure, Process, and Performance



4.3. HYPOTHESES

4.3.1. Cultural Distance

Cultural distance – Performance. Despite impressive efforts to clarify the influence of cultural distance on performance, the results of previous empirical research are non-conclusive. The influence of cultural differences on performance can be theorized in number of ways.

On one hand, cultural differences can have a positive influence on performance via the creation of unique combinations of resources, competences, and strategies. “At the strategic phase, cultural differences may be a basis for synergy” (Shenkar, 2001: 524). Differences in partners’ cognitive frameworks and behavior may induce partners to question their understanding of the way to carry out the project and therefore can stimulate a search for novel solutions. That is, cultural differences can provide opportunities to learn about “alternative better ways of doing things” (Stinchcombe, 1965: 146).

On the other hand, cultural differences can influence performance negatively in a number of ways. It can become an obstacle for achieving congruency in partner organizations’ goals and expectations with respect to their collaborative project and therefore affect the project’s viability. Zukin and DiMaggio (1990: 17) suggest that economic behavior is culturally embedded, that is,

that shared collective understandings – priorities, formal rules systems, taken for granted assumptions, etc. – shape economic strategies and goals. Thus, at least to some extent these goals and priorities are determined by cultural idiosyncrasy and may differ from country to country (Hofstede, 1983). For example, differences in preferences with respect to the time of investment payback and/or risk tolerance can impede reaching an agreement on appropriate strategy. Thus, cultural distance can make it more difficult to achieve congruency in goals and priorities. Additionally, organizational practices related to work organization, communication, and conflict resolution routines may differ from culture to culture (Isenberg, 2008; Hofstede, 1981, 1983). Differences in these routines between partners may influence the transaction and coordination costs they will incur (Gulati, Nohria and Zaheer, 2000). Idiosyncratic institutionalized norms inherited from national cultures can make parties' behavior less understandable and predictable. It hinders interactions, which in turn may hinder alliance evolution, because socialization is important for the development and institutionalization of alliance-specific relational norms needed to provide parties with more flexibility and alternative governance mechanisms (Ring and Van de Ven, 1994). In the absence of these norms, partners will not be able to undertake those projects in which risks cannot be described in/safeguarded by formal contracts. Therefore, we state two alternative hypotheses:

Hypothesis 1.1: Cultural distance between alliance partners has a positive relationship with alliance performance.

Hypothesis 1.2: Cultural distance between alliance partners has a negative relationship with alliance performance.

Processes and Process-related Factors and Performance. To establish the mediating role of processes and process-related factors in the *cultural distance – performance* and *mutual experience – performance* relationships (hypotheses 3a-e and 5a-e respectively), we have to first show that these factors are related to performance. Personal relationships between representatives of partner companies or boundary-spanner connections which develop while partners carry out their economic or task-oriented activities, facilitate the creation of relational capital (Luo, 2007). Relational capital includes the socio-psychological aspects of alliances that are beneficial to the alliance such as relational skills, group norms, organizational routines, the ability to reach congruency in goals and behavior, etc. (Madhok and Tallman, 1998; Cullen, Johnson and Sakano, 2000). It plays an important role in reducing the chances for self-interested opportunistic behavior (Emerson, 1976; Madhok and Tallman 1998; Luo, 2007) and allows partners to economize on transaction costs as well as to undertake economically and technologically more ambitious projects which would be impossible to undertake otherwise due to their partner's high behavior-related risk associated with its governance difficulties

(Emerson, 1976; Lane, Salk and Lyles, 2001; Luo, 2007). Such relational assets or capital is not completely transferrable from previous mutual or cultural experiences because it is “specific to the individual and small group interactions within the particular alliance” (Madhok and Tallman, 1998: 331).

Madhok and Tallman (1998) further explain that the development of high quality relationships involves a substantial commitment of managerial time, energy, and effort and “require[s] social commitment and entanglements of individual agents”. Observed relational investments in the form of willingness to adjust and to share needed information are interpreted by partners as positive signals and reduce the perception of uncertainty. When the relationship is described by “a positive and mutual orientation [rather] than just by the avoidance of opportunism” (Madhok and Tallman, 1998: 330), it becomes a specialized resource/asset in itself, which allows partners to redirect resources from designing safeguards, monitoring, and even haggling, to synergetic value creation via effective amalgamation of resources and capabilities, and the exploitation of relationship-specific opportunities (Madhok and Tallman, 1998; Luo, 2007). These opportunities result in mutual learning and specialized expertise, which develop as personal bonds between partners accumulate and strengthen (Luo, 2007). Mutual learning is required to verify the extent of complementarity of partners’ contributions, which enables partners to better evaluate possible future common benefits, as well as to expand the frontier of common benefits (Madhok and Tallman, 1998; Khanna, 1998). Trust developed in interpersonal and interorganizational relationships reduces the risks of the exchange caused by uncertainty related to partners’ behavior (Ring and Van de Ven, 1992; Emerson, 1976) and therefore decreases transaction costs (Dyer and Chu, 2003). It also increases flexibility (Dirks and Ferrin, 2001) and therefore facilitates adaptation (Ring and Van de Ven, 1994) and satisfaction with a partner (Gargiulo and Ertug in Bachmann and Zaheer, 2006). Thus, the relational investments and the way in which economic transactions between partners are effectuated, among other factors, can generate quasi-rents¹⁵ unique to an alliance (Dyer, 1997; Dyer and Singh, 1998; Madhok and Tallman, 1998). As Madhok and Tallman (1998: 331) explain: “relational investments act to embed the alliance in the very same process which serves to increase the quasi-rents from collaboration”. Nevertheless, the overreliance on trust may also create conditions for opportunistic behavior (Ring and Van de Ven, 1994;

¹⁵ Quasi-rents have been defined as value arising from specialized and imperfectly mobile resources. In the alliance context, the relationship characterized by social commitments and involvement can be considered alliance-specific relational capital or an asset that results from the investment of managerial time, energy, and effort, and enables a generation of the collaboration-specific quasi-rents (Madhok and Tallman, 1998).

Nooteboom, 2002) due to reduced monitoring (Gargiulo and Ertug in Bachmann and Zaheer, 2006). Therefore, we state:

Baseline Hypothesis 2a-e: Processes and process-related factors (a) interorganizational commitment, (b) transparency of information exchange, (c) disagreements, (d) trust, and (e) learning have a significant relationship with alliance performance. Correspondingly, the relationships a, b, d, and e are positive, while relationship c is negative.

The Mediating Role of Processes and Process-related Factors in the Cultural distance – Performance Relationship. Through interpersonal interactions, partners accumulate social bonds (Luo, 2007). This process of social bonding is affected by cultural distance (Luo, 2001). The more familiar that partners are with each other's cultures, the processes of establishing new roles, communication channels, ways to deal with conflict, decision criteria, and the structure of rewards will be easier, and the time and costs of mutual adaptation will be reduced (Stinchcombe, 1965).

The processes in our model are related to the execution of formal and psychological contracts that partners have created in the process of negotiation, and reflect the quality of this activity; these processes are regarded as developmental attributes of social exchange relationships unfolding between partners. They reflect partners' capacity and willingness to carry obligations, and are influenced by the way partners understand their roles and personal relationships (Ring and Van de Ven, 1994). What is understood as acceptable/appropriate behavior by each partner is influenced by the norms of the dominant institutional orders in which partners are embedded. At the early stages of collaboration, when the institutional order tailored to the alliance and the corresponding shared understanding (of goals, appropriate behavior, and what is fair dealing) are not yet developed, the norms of partners' dominant institutional orders can come to guide each partner's behavior. Cultural differences make it more difficult to arrive at the same choice of institutional order due to differences in priorities, and even if the same institutional order has been chosen, the typical ways to do proceed may also differ with culture. Thus, cultural differences may lead to disagreements, misinterpretation of each other's actions, difficulties in establishing communication, and therefore can negatively impact the alliance. Ring and Van de Ven (1994: 94) wrote: "Research about bargaining has indicated that fair dealing as a standard for assessing cooperative IORs [interorganizational relationships] can be influenced by the personalities and individual differences of transacting parties, particularly in ambiguous situations, as in the early stages of cooperative relationships. However, the ranges of these variations tend to be limited by cultural or institutional norms of acceptable behavior of organizations and society (Scott, 1987)".

Thus, cultural distance influences processes and process-related factors, which in turn influences alliance performance. Hence:

Hypothesis 3: Processes and process-related factors (a) interorganizational commitment, (b) transparency of information exchange, (c) disagreements, (d) trust, and (e) learning mediate the relationship between cultural distance and alliance performance.

4.3.2. Mutual Experience

Mutual experience – performance. Mutual experience between partners is associated with higher initial levels of knowledge about each other. This knowledge may reduce the transaction costs associated with subsequent alliances between partners (Gulati, 1995) including both time for writing a formal contract and the efforts necessary for conflict resolution. Repeated interactions enhance partners' mutual knowledge about their systems, processes, and routines (Dekker and Van den Abbeele, 2010), reducing the costs of learning about the partner in subsequent negotiations (Webe et al., 2011). Through previous relationships, firms learn about their partner and his/her values (Gargiulo and Ertug in Bachmann and Zaheer, 2006), and about themselves in relation to the partner (Ring and Van de Ven, 1994). They develop common norms, language, and understanding (Mayer and Argyres, 2004). Working together in prior alliances means that partners have developed a set of similar underlying assumptions and experiences (Zaheer et al., 1998) and will spend less time on sense-making activities in subsequent collaborations and therefore can work with one another more effectively from the start of a subsequent alliance (Mayer and Argyres, 2004). Learning about each other's skills and ways to cooperate resulting from mutual experience may facilitate the partners' ability to capture common benefits (Khanna, 1998). Therefore, our hypothesis is:

Hypothesis 4: Mutual experience between alliance partners has a significant positive relationship with alliance performance.

The Mediating Role of Processes and Process-related Factors. Relational governance mechanisms help to coordinate and control collaborative activities, but they are not available during the initial period of the collaborative process. Their development can take a long time, and their absence can lead to difficulties especially during the first years of the alliance life (Ring and Van de Ven, 1994). Previous mutual experience is a source of some previously developed and institutionalized norms that parties can rely on until new norms are developed (Ring and Van de Ven, 1994). When partners are familiar with one another because of

previous mutual alliances, participating managers have “accumulated meaningful knowledge about, or established affective bonds with, one another” (Bigley and Pearce, 1998: 412). This knowledge and these bonds help partners to interpret each other’s actions better and therefore it contributes positively to the quality of the relationship. It also helps mutual accommodation and therefore helps parties to meet their asymmetric goals (Schelling, 1960). Personal attachment resulting from previous mutual experience binds partners together and motivates them to continue the relationship despite the emergence of problems and alternative opportunities, it helps reduce the scope of a conflict, and to form relational norms (Cullen et al., 2000).

Mutual experience may affect learning (Doz, 1996) and trust among participating managers (Kwon, 2008), because to come to trust each other parties must understand the norms underlying the partner’s behavior. Therefore,

Hypothesis 5a-e: Processes and process-related factors (a) interorganizational commitment, (b) transparency of information exchange, (c) disagreements, (d) trust, and (e) learning mediate the relationship between mutual experience and alliance performance.

4.4. METHODS

4.4.1. Sample and Variables

The process of the collection and selection of studies from which we have extracted correlation coefficients that have been meta-analyzed in this chapter is described in sections 2.3.1 to 2.3.4. After controlling for duplicated effect sizes, our collection process resulted in 106 usable studies conducted on 19512 alliances in total; the number of alliances per relationship analyzed is between 153 and 10,753. The number of studies (k) used to calculate the weighted average correlations in our meta-analysis ranges from 2 to 46 per relationship.

From the collected studies we have extracted variables describing the constructs of our interest: alliance social structure (national cultural distance and mutual experience), alliances processes and process-related factors (interorganizational commitment, transparency of information exchange, disagreements, learning, and trust), and performance. Definitions of the variables are provided in Table 2-1 of Chapter 2.

4.4.2. Moderator Analysis Performed

A number of potential methodological moderators have been examined. The moderators analyzed relate to different operationalizations of several constructs. In particular: alliance performance, cultural distance, and mutual experience. *Alliance performance* is operationalized in a variety of ways. The four most frequently used operationalizations are overall, multidimensional, financial, and goal achievement measures of performance. *Cultural distance* is typically measured using a dummy variable (domestic partner vs. international partner), by Kogut and Singh's index of cultural distance based on Hofstede's five dimensions of cultural differences, or as a subjective perception of distance between partners measured on a Likert scale. Two categories of measures of *mutual experience* emerged from the collected studies. The first one captures the extent of mutual experience by the number of years partners collaborated in the past, divided by the number of previous alliances or some combination of them. The second one is a dummy variable capturing the presence or absence of a prior mutual relationship.

We analyzed whether the magnitude of the relationships depends on whether one or another type of measure was used. Methodological moderators that we analyzed are categorical moderators, therefore, we applied a subgroup analysis.

4.5. RESULTS

Tables 4-2 to 4-4 contain the results of our meta-analyses. Table 4-5 provides the summary of results. The first two columns show the relationship analyzed. The next two columns provide the number of studies that were analyzed and the total sample size. The corrected weighted average correlation – the best estimate of true population correlation – is shown next, and is followed by the estimated variance of true population correlation. Then, we report a 95% confidence interval (CI), which was used to judge whether the correlation was different from zero; an 80% credibility interval (CR), percent of variance accounted for by sampling error, and the value of Q-statistics for the chi-square test for heterogeneity; the last three statistics were used to judge the presence of moderating variables.

We describe result of the meta-analysis in the following way. First, we report whether the correlation coefficients for the hypothesized relationships are significant or not. Second, we explain whether the reported results – the significance of correlation coefficients or lack thereof – are likely to remain stable or may vary across different contexts. If the moderator analysis was conducted for

the focal relationship, we reported its findings too. The results of moderator analysis are reported in table 4-6.

Table 4-2. Meta-Analytic Results for Cultural Distance

Relationship		k	N	Mean r	Var. ρ	95% CI		80% CR		Expl. var., %	Q (p)
Cultural distance	Performance	46	10753	0.00	0.012	0.00	0.01	-0.14	0.14	26	176.55 (0.00)
	Binary	9	1127	0.09	0.025	-0.03	0.21	-0.11	0.29	26	34.08 (0.00)
	KS HF	20	7654	0.03	0	0.01	0.05	NA		100	15.38 (0.70)
	Perceptual	17	1972	-0.17	0.039	-0.28	-0.06	-0.43	0.08	23	74.68 (0.00)
	Binary										
	Overall	4	288	0.14	0	0.08	0.20	NA		100	1.03 (0.79)
	Multidm.	5	839	0.07	0.036	-0.11	0.26	-0.17	0.32	15	31.83 (0.00)
	Financial	-	-	-	-	-	-	-	-	-	-
	Goals	-	-	-	-	-	-	-	-	-	-
	KS HF										
	Overall	5	2030	0.03	0.001	-0.02	0.09	-0.01	0.07	75	6.60 (0.16)
	Multidm.	8	1061	0.05	0	0.00	0.10	NA		100	4.63 (0.70)
	Financial	9	4865	0.03	0	0.00	0.05	NA		100	4.26 (0.83)
	Goals	-	-	-	-	-	-	-	-	-	-
	Perceptual										
	Overall	4	495	-0.16	0.017	-0.32	0.01	-0.32	0.01	39	10.43 (0.02)
	Multidm.	11	1133	-0.14	0.081	-0.32	0.04	-0.50	0.22	14	78.74 (0.00)
	Financial	2	395	-0.10	0.014	-0.30	0.10	-0.25	0.06	31	6.44 (0.01)
	Goals	2	153	-0.06	0.000	-0.23	0.11	NA		100	1.58 (0.21)
Cultural distance	Commitment	19	2863	-0.06	0.024	-0.15	0.02	-0.26	0.13	28	68.91 (0.00)
	Binary	3	658	0.02	0.004	-0.09	0.13	-0.06	0.10	55	5.49 (0.06)
	KS HF	5	834	-0.01	0	-0.05	0.03	NA		100	1.50 (0.83)
	Perceptual	11	1381	-0.13	0.053	-0.28	0.02	-0.43	0.16	18	62.38 (0.00)
Cultural distance	Transparency	14	1666	-0.10	0.022	-0.20	-0.01	-0.30	0.09	33	42.33 (0.00)
	Binary	4	409	-0.21	0.014	-0.37	-0.06	-0.36	-0.07	44	10.61 (0.01)
	KS HF	5	690	-0.02	0	-0.09	0.04	NA		100	2.81 (0.59)
	Perceptual	7	733	-0.14	0.036	-0.31	0.02	-0.39	0.10	28	25.91 (0.00)

Table 4-2 continued

Relationship		k	N	Mean r	Var. ρ	95% CI		80% CR		Expl. var., %	Q (p)
Cultural distance	Disagreements	6	711	0.34	0.041	0.16	0.52	0.08	0.60	19	30.00 (0.00)
	Binary	-	-	-	-	-	-	-	-	-	-
	KS HF	2	252	0.17	0.000	0.03	0.31	0.16	0.18	99	2.03 (0.15)
	Perceptual	4	459	0.45	0.036	0.24	0.66	0.21	0.69	20	19.94 (0.00)
Cultural distance	Trust	20	3005	-0.10	0.011	-0.16	-0.04	-0.23	0.04	41	46.97 (0.00)
	Binary	8	1206	-0.01	0.001	-0.07	0.05	-0.04	0.02	93	8.60 (0.28)
	KS HF	6	928	-0.07	0	-0.11	-0.03	NA		100	2.4 (0.79)
	Perceptual	9	1282	-0.21	0.020	-0.32	-0.10	-0.39	-0.03	31	27.95 (0.00)
Cultural distance	Learning	11	1794	-0.06	0.017	-0.15	0.04	-0.23	0.11	31	35.52 (0.00)
	Binary	3	638	0.10	0.000	0.06	0.13	NA		100	0.56 (0.75)
	KS HF	3	553	-0.09	0.003	-0.20	0.02	-0.16	-0.02	66	4.67 (0.10)
	Perceptual	5	603	-0.23	0.000	-0.33	-0.14	NA		100	7.05 (0.13)

Note: k – number of samples; N – total sample size; Mean r - sample-size-weighted mean corrected correlation; Var. ρ – estimated variance of population correlation; CI – confidence interval; CR – credibility interval; Q – Chi-square test for heterogeneity of effect sizes.

Table 4-3. Meta-Analytic Results for Processes and Process-Related Factors

Relationship		k	N	Mean r	Var. ρ	95% CI		80% CR		Expl. var., %	Q (p)
Commitment	Performance	25	3865	0.50	0.033	0.42	0.58	0.27	0.73	15	166.48 (0.00)
	Overall	3	388	0.34	0.000	0.24	0.45	NA		100	2.91 (0.23)
	Multidm.	17	2665	0.56	0.033	0.47	0.65	0.33	0.79	14	128.84 (0.00)
	Financial	4	697	0.46	0.022	0.29	0.63	0.27	0.65	23	19.71 (0.00)
	Goals	2	214	0.30	0.003	0.13	0.48	0.23	0.38	78	2.63 (0.11)
Transparency	Performance	16	2273	0.40	0.018	0.32	0.48	0.23	0.57	31	54.29 (0.00)
	Overall	2	287	0.12	0.001	-0.03	0.26	0.07	0.16	90	2.23 (0.14)
	Multidm.	12	1854	0.42	0.010	0.35	0.49	0.29	0.55	40	32.29 (0.00)
	Financial	3	543	0.15	0.001	0.00	0.30	0.02	0.27	42	7.17 (0.03)
	Goals	4	491	0.35	0.000	0.28	0.41	NA		100	2.42 (0.49)
Disagreements	Performance	9	880	-0.24	0.003	-0.32	-0.16	-0.31	-0.17	82	11.18 (0.19)
	Overall	3	379	-0.28	0.008	-0.43	-0.13	-0.40	-0.16	52	5.36 (0.07)
	Multidm.	4	352	-0.20	0.002	-0.32	-0.08	-0.25	-0.15	90	4.99 (0.17)
	Financial	-	-	-	-	-	-	-	-	-	-
	Goals	3	209	-0.15	0.000	-0.24	-0.07	NA		100	0.80 (0.67)

Table 4-3 continued

Relationship		k	N	Mean r	Var. ρ	95% CI		80% CR		Expl. var., %	Q (p)
Trust	Performance	30	4442	0.51	0.044	0.43	0.59	0.24	0.78	11	270.00 (0.00)
	Overall	5	818	0.46	0.028	0.30	0.61	0.24	0.67	15	39.29 (0.00)
	Multidm.	17	2369	0.62	0.022	0.54	0.70	0.43	0.81	19	110.5 (0.00)
	Financial	6	1047	0.37	0.053	0.17	0.57	0.07	0.66	11	56.43 (0.00)
	Goals	2	205	0.29	0.000	0.22	0.35	NA		100	0.37 (0.55)
Learning	Performance	11	1718	0.41	0.014	0.33	0.49	0.26	0.56	32	34.80 (0.00)
	Overall	3	684	0.42	0.029	0.22	0.62	0.20	0.64	12	28.5 (0.00)
	Multidm.	4	498	0.37	0.002	0.28	0.47	0.32	0.43	83	3.5 (0.32)
	Financial	4	567	0.34	0.004	0.24	0.45	0.26	0.43	64	6.35 (0.10)
	Goals	-	-	-	-	-	-	-	-	-	-

Note: k – number of samples; N – total sample size; Mean r - sample-size-weighted mean corrected correlation; Var. ρ – estimated variance of population correlation; CI – confidence interval; CR – credibility interval; Q – Chi-square test for heterogeneity of effect sizes.

Table 4-4. Meta-Analytic Results for Mutual Experience

Relationship		k	N	Mean r	Var. ρ	95% CI		80% CR		Expl. var., %	Q (p)
Mutual experience	Performance	23	3147	0.13	0.013	0.07	0.18	-0.02	0.27	38	57.82 (0.00)
	Overall	5	545	0.17	0.012	0.04	0.31	0.03	0.32	45	11.25 (0.02)
	Multidm.	12	1800	0.16	0.006	0.10	0.23	0.06	0.26	56	21.19 (0.03)
	Financial	2	304	0.34	0.000	0.02	0.67	NA		100	0.07 (0.79)
	Goals	5	609	-0.03	0.009	-0.14	0.09	-0.15	0.10	48	10.48 (0.03)
Binary measures		10	1508	0.11	0.012	0.03	0.20	-0.03	0.26	38	26.31 (0.00)
Not bin. measures		12	1451	0.13	0.015	0.04	0.21	-0.03	0.28	38	30.07 (0.00)
Mutual experience	Commitment	12	2245	0.13	0.004	0.07	0.18	0.04	0.21	62	19.85 (0.05)
Binary measures		6	1161	0.10	0.004	0.02	0.18	0.03	0.18	64	9.29 (0.10)
Not bin. measures		6	1002	0.08	0.005	0.00	0.17	0.00	0.17	62	9.97 (0.08)
Mutual experience	Transparency	10	1008	0.05	0.000	-0.01	0.12	NA		100	9.7 (0.38)
Binary measures		4	358	0.08	0.001	-0.04	0.20	0.04	0.12	94	4.29 (0.23)
Not bin. measures		6	650	0.04	0.000	-0.04	0.12	NA		100	5.23 (0.39)
Mutual experience	Disagreements	-	-	-	-	-	-	-	-	-	-
Mutual experience	Trust	18	2877	0.13	0.017	0.06	0.21	-0.03	0.30	29	59.31 (0.00)
Binary measures		5	1101	0.04	0.012	-0.07	0.15	-0.10	0.18	30	16.63 (0.00)
Not bin. measures		13	1776	0.20	0.011	0.12	0.27	0.06	0.33	42	28.45 (0.00)
Mutual experience	Learning	5	666	0.12	0.000	0.05	0.18	NA		100	3.35 (0.50)
Binary measures		3	413	0.07	0.000	0.02	0.13	NA		100	0.82 (0.66)
Not bin. measures		2	253	0.18	0.000	0.11	0.25	NA		100	0.64 (0.42)

Note: k – number of samples; N – total sample size; Mean r - sample-size-weighted mean corrected correlation; Var. ρ – estimated variance of population correlation; CI – confidence interval; CR – credibility interval; Q – Chi-square test for heterogeneity of effect sizes.

Table 4-5. Summary of Hypothesized Relationships and Results

H	Relationship	Hypothesized effect	Results	Support
1	CD → Performance	+/-	0.00 CR (-0.14; 0.14)	NA
2	Process → Performance			
a	Commitment → Performance	+	0.50*	Yes
b	Transparency → Performance	+	0.40*	Yes
c	Disagreements → Performance	-	-0.24*	Yes
d	Trust → Performance	+	0.51*	Yes
e	Learning → Performance	+	0.41*	Yes
3	CD → Process → Performance			
a	CD → Commitment	mediation	-0.06 CR (-0.26; 0.13)	NA
b	CD → Transparency	mediation	-0.10* CR (-0.30; 0.09)	NA
c	CD → Disagreements	mediation	0.34*	Yes
d	CD → Trust	mediation	-0.10* CR (-0.23; 0.04)	NA
e	CD → Learning	mediation	-0.06 CR (-0.23; 0.11)	NA
4	ME → Performance	+	0.13* CR (-0.02; 0.27)	NA
5	ME → Process → Performance			
a	ME → Commitment	mediation	0.13*	Yes
b	ME → Transparency	mediation	0.04 CR (-0.02; 0.10)	No
c	ME → Disagreements	mediation	-	No data
d	ME → Learning	mediation	0.12*	Yes
e	ME → Trust	mediation	0.13* CR (-0.03; 0.30)	NA

Note: * $p < 0.05$; CD – cultural distance (all measures combined); ME – mutual experience (all measures combined); CR – credibility interval. It is reported only if it includes zero; NA – hypothesis cannot be supported or rejected, moderator analysis is needed

Table 4-6. Results of Moderator Analysis

Relationship		Mean r	k	N	Var e	(1)	(2)	(3)	(4)
Cultural distance	Performance								
(1) Binary		0.09	9	1127	0.008	0	1.89	7.07	-
(2) KS HF		0.03	20	7654	0.003		0	8.11	-
(3) Perceptual		-0.17	17	1972	0.008			0	-
Cultural distance	Performance								
Binary	(1) Overall	0.14	4	288	0.014	0	1.02	-	-
	(2) Multidimensional	0.07	5	839	0.006		0	-	-
	(3) Financial	-	-	-	-			-	-
	(4) Goals	-	-	-	-				-
KS HF	(1) Overall	0.03	5	2030	0.003	0	-0.44	0.17	-
	(2) Multidimensional	0.05	8	1061	0.008		0	0.62	-
	(3) Financial	0.03	9	4865	0.002			0	-
	(4) Goals	-	-	-	-				-
Perceptual	(1) Overall	-0.16	4	495	0.008	0	-0.31	-0.86	-1.03
	(2) Multidimensional	-0.14	11	1133	0.010		0	-0.71	-0.92
	(3) Financial	-0.10	2	395	0.005			0	-0.40
	(4) Goals	-0.06	2	153	0.013				0

Table 4-6 continued (1)

Relationship		Mean r	k	N	Var e	(1)	(2)	(3)	(4)
Commitment	Performance								
	(1) Overall	0.34	3	388	0.007	0	-4.38	-2.03	0.53
	(2) Multidimensional	0.56	17	2665	0.004		0	2.77	3.88
	(3) Financial	0.46	4	697	0.004			0	2.18
	(4) Goals	0.30	2	214	0.008				0
Disagreements	Performance								
	(1) Overall	-0.28	3	379	0.007	0	1.15	-	-1.53
	(2) Multidimensional	-0.20	4	352	0.011		0	-	-0.54
	(3) Financial	-	-	-	-			-	-
	(4) Goals	-0.15	3	209	0.002				0
Transparency	Performance								
	(1) Overall	0.12	2	287	0.007	0	-4.89	-0.43	-3.23
	(2) Multidimensional	0.42	12	1854	0.005		0	5.79	1.62
	(3) Financial	0.15	3	543	0.005			0	-3.39
	(4) Goals	0.35	4	491	0.007				0
Learning	Performance								
	(1) Overall	0.42	3	684	0.003	0	0.88	1.53	-
	(2) Multidimensional	0.37	4	498	0.006		0	0.57	-
	(3) Financial	0.34	4	567	0.006			0	-
	(4) Goals	No data							-
Trust	Performance								
	(1) Overall	0.46	5	818	0.004	0	-5.11	2.17	2.32
	(2) Multidimensional	0.62	17	2369	0.004		0	8.01	4.93
	(3) Financial	0.37	6	1047	0.005			0	1.11
	(4) Goals	0.29	2	205	0.009				0

Table 4-6 continued (2)

Relationship		Mean r	k	N	Var e	(1)	(2)	(3)	(4)
Cultural distance	Commitment								
(1) Binary		0.02	3	658	0.005	0	0.602	3.25	-
(2) KS HF		-0.01	5	834	0.006		0	2.80	-
(3) Perceptual		-0.14	11	1381	0.008			0	-
Cultural distance	Transparency								
(1) Binary		-0.21	4	409	0.008	0	-3.31	-1.26	-
(2) KS HF		-0.02	5	690	0.007		0	2.28	-
(3) Perceptual		-0.14	7	733	0.009			0	-
Cultural distance	Disagreements								
(1) Binary		-	-	-	-	-	-	-	-
(2) KS HF		0.17	2	252	0.008		0	-3.84	-
(3) Perceptual		0.45	4	459	0.006			0	-
Cultural distance	Trust								
(1) Binary		-0.01	8	1206	0.007	0	1.31	5.11	-
(2) KS HF		-0.07	6	928	0.007		0	3.4	-
(3) Perceptual		-0.21	9	1282	0.007			0	-
Cultural distance	Learning								
(1) Binary		0.10	3	638	0.005	0	45.9	73.24	-
(2) KS HF		-0.09	3	553	0.005		0	29.38	-
(3) Perceptual		-0.23	5	603	0.008			0	-

Table 4-6 continued (3)

	Relationship	Mean r	k	N	Var e	(1)	(2)	(3)	(4)
Mutual experience	Performance								
	(1) Overall	0.17	5	545	0.009	0	0.21	-2.44	3.40
	(2) Multidimensional	0.16	12	1800	0.006		0	-3.00	4.03
	(3) Financial	0.34	2	304	0.006			0	5.37
	(4) Goals	-0.03	5	609	0.008				0
Mutual experience	Performance								
(1) Binary		0.11	10	1508	0.007	0	-0.37	-	-
(2) Continuous		0.13	12	1451	0.008		0	-	-
Mutual experience	Commitment								
(1) Binary		0.10	1161	6	0.005	0	0.42	-	-
(2) Continuous		0.08	1002	6	0.006		0	-	-
Mutual experience	Transparency								
(1) Binary		0.08	358	4	0.011	0	0.535	-	-
(2) Continuous		0.04	650	6	0.009		0	-	-
Mutual experience	Trust								
(1) Binary		0.04	1101	5	0.005	0	-4.072	-	-
(2) Continuous		0.19	1776	13	0.007		0	-	-
Mutual experience	Learning								
(1) Binary		0.07	413	3	0.007	0	-1.41	-	-
(2) Continuous		0.18	253	2	0.008		0	-	-

Note: k – number of samples; N – total sample size; Mean r - sample-size-weighted mean corrected correlation; Var. e – estimated variance of sampling error; columns (1) to (4) report values of Z statistics; * - $p < 0.05$.

4.5.1. Results for Cultural Distance and Performance

Our findings (see table 4-2) show that cultural distance and performance are not significantly related $\bar{r}_c = 0.00$ (95% CI is 0.00 to 0.01). Earlier meta-analyses focusing on how cultural distance influences performance in the context of alliances (Krishnan and Cunha, 2005), international joint ventures (Reus and Rottig, 2009), alternative MNE's entry mode choices (Magnusson, Baack, Zdravkovic, Staub and Amine, 2008; Tihanyi, Griffith and Russell, 2005) have arrived at comparable results, i.e., they found that the mean true correlation is either not significant or is very close to zero.

This lack of statistical significance can be caused by the heterogeneity of the relationship, i.e. correlations that take different signs depending on the context cancel each other out if they are averaged. Indeed, the chi-square test for heterogeneity ($Q=176.55$, $p=0.00$), low percentage of variance accounted for (26%), as well as a zero in credibility interval (80% CR is -0.14 to 0.14) suggest that both the magnitude and the sign of the correlation coefficient may depend on the context. According to the guidelines provided by Hunter and Schmidt, if the credibility interval contains zero, one should not proceed with a standard hypothesis testing procedure based on confidence interval but rather undertake the search for moderating factors. The rejection of both hypotheses 1.1 and 1.2 based on the confidence interval can be misleading because depending on context, cultural distance and performance may be related negatively or positively.

Hierarchical Moderator Analysis of the Cultural Distance - Performance Relationship.

The first step of hierarchical moderator analysis: moderator analysis by measures of cultural distance. It is interesting to know whether conceptual differences between measures of cultural distance (Shenkar, 2001) are also reflected in the strength of the relationship between *cultural distance* and *performance*. Thus, we have performed a moderator analysis of this relationship by measures of cultural distance. Indeed, results of a Z-test of differences between correlations of each of three measures of cultural distance and performance (see table 4-6) show that these differences are highly significant. Meta-analytic results for the relationships between different measures of cultural distance and performance are reported in table 4-2 and described below.

The relationship *binary measure of cultural distance* is not significantly related to performance ($\bar{r}_c = 0.09$, 95% CI is -0.03 to 0.21). However, we cannot rule out further moderation by other variables because tests for heterogeneity suggest their possible presence. Specifically, 26% of

variance accounted for is lower than the 75% threshold suggested by Hunter and Schmidt. The Q-statistic of chi-square test for heterogeneity is significant at $p=0.00$, and the credibility interval contains zero (CR is -0.11 to 0.29).

Kogut and Singh's index of cultural distance is positively and statistically significantly related to performance; however, the correlation coefficient is very low ($\bar{r}_c = 0.03$, 95% CI is 0.01 to 0.05). This relationship is homogenous according to all tests. Specifically, 100% of variance is accounted for and the Q-statistic of the chi-square test for heterogeneity is not significant ($Q=15.38$, $p=0.70$).

The relationship *perceptual measure of cultural distance – performance* is heterogeneous according to the percent of variance accounted for (23%) and the chi-square test for heterogeneity ($Q=74.68$, $p=0.00$). Its sign may vary with context because the credibility interval contains zero (CR is -0.43 to 0.08). It would be misleading to conclude that the perceived measure of cultural distance is strictly negatively related to performance ($\bar{r}_c = -0.17$, 95% CI is -0.28 to -0.06) based on the confidence interval because in some contexts these variables may be not related at all (or even be positively related).

The second step of hierarchical moderator analysis: moderator analysis by measures of performance. Measures of performance may reflect the different dimensions of alliance effectiveness and be more or less comprehensive (Ariño, 2003). To our knowledge, no meta-analysis explicitly distinguishing between measures of performance has been conducted yet. Since it was found that not all performance measures are highly correlated (Ariño, 2003; Lunnan and Haugland, 2008), we analyzed whether the measures of performance used in the studies included in our meta-analysis can further moderate the relationship between cultural distance and performance. Table 4-6 presents the results of the Z-tests of differences in effect sizes.

The *binary measure of cultural distance – performance* relationship. The studies included in our meta-analysis used two measures of performance: overall and multidimensional. Although our results show that the relationships with overall and multidimensional measures of performance are not significantly different from each other ($Z= 1.02$; $p= 0.15$), the mean corrected correlation with the overall performance measure is positive, significant, and homogeneous $\bar{r}_c = 0.14$ (CI is 0.08 to 0.20), whereas the multidimensional measure is not significant and heterogeneous with zero in CR ($\bar{r}_c = 0.07$, CI is -0.11 to 0.26 and CR is -0.17 to 0.32). Thus, the relationship *binary measure of cultural distance – multidimensional performance* is further moderated. Therefore, we cannot rule out the possibility that measures of performance moderate this relationship.

The *Kogut and Singh's index of cultural distance – performance* relationship. This relationship is homogeneous and does not require moderator analysis. Currently, the validity of Kogut and Singh's index of cultural distance (precisely of Kogut and Singh's index based on Hofstede's dimensions of cultural distance) is under debate. Past meta-analytic studies found that its influence on performance may depend on several theoretical and methodological moderators. Thus, we conducted a moderator analysis. Studies in our meta-analysis relied on three measures of performance: overall, multidimensional, and economic. Our results show that the average correlations of Hofstede's measure of cultural distance with either of the performance measures are not different from each other, although the relationship with overall performance may be further moderated since it has zero in its CR (-0.01 to 0.07). In fact, if such a moderator could be identified, it would mean that in some contexts the overall satisfaction with alliance performance is weakly positively associated with Kogut and Singh's index of cultural distance, while other measures of performance are not affected directly by Kogut and Singh's index of cultural distance.

The *perceptual measure of cultural distance – performance* relationship. Four measures of performance were used in the studies included in our meta-analysis: overall, multidimensional, economic, and goal achievement. As in the case with the binary measure of cultural distance, our results show that the relationships of *perceptual measure of cultural distance* with various measures of performance are not significantly different from each other. We concluded that the excess of heterogeneity is caused by other moderators, rather than by performance measures. Taking into account that some subgroups have become more homogeneous, it would still be interesting to analyze whether measures of performance can explain some heterogeneity, but only after other potential moderators are identified.

Additional Moderator Analysis by the Magnitude of Cultural Distance, Year of Publication and Age of Alliances

Magnitude of cultural distance. Additionally, we have tested whether the strength of the relationship between cultural distance and performance can be influenced by the magnitude of cultural differences. We analyzed this in three different ways. First, we replicated the approach used by Li et al. (2015). The studies for which the mean value of the cultural distance was reported were split into low cultural distance and high cultural distance subgroups. The studies with a contextual distance below or equal to the median value were classified into low cultural distance subsample, and the others into high cultural distance subsample. Then, we performed a meta-analysis of each subgroup and a Z-test of differences between subgroups' mean corrected correlations. Second, we ran a weighted regression with reported in-study correlation coefficients

as a dependent variable, mean values of cultural distance for study samples as an independent variable, and sample sizes as weights (Hedges and Olkin, 1985). Third, we tested whether the mean level of cultural distance in the studies, which reported positive correlations between cultural distance and performance, was different from the mean level of cultural distance in the studies, which reported negative correlations using the approach suggested in Cameron and Trivedi (2010: 80).

For *Kogut and Singh's index of cultural distance* we received following results. First, in a subgroup analysis, the level of *Kogut and Singh's index of cultural distance* was not significantly or weakly related to performance in either subgroup. The mean corrected correlations and confidence intervals for low and high distance subgroups are $\bar{r}_c = 0.04$ (95% CI is 0.01 to 0.06) and $\bar{r}_c = 0.04$ (95% CI is -0.01 to 0.08) respectively. Both relationships are homogeneous. A Z-test of differences shows that there is no statistically significant difference between means ($Z = -0.079$). Second, the regression was overall insignificant ($F = 0.435$) with only 2.6% of variance explained. Third, we performed OLS regression with a mean level of cultural distance for a sample as a dependent variable and a dichotomized independent variable that took a value of 1 if the correlation coefficient was positive, and 0 otherwise. Neither intercept nor the beta-coefficient were significant. Thus, we concluded that currently there is no evidence that the magnitude of cultural distance measured by Kogut and Singh's index linearly affects its relationship with performance.

For the relationship *perceptual measure of cultural distance – performance*, the conclusion is essentially the same. The subgroup analysis showed that the *perceptual measure of cultural distance* is not significantly related to performance in either subgroup. The mean corrected correlations and confidence intervals for low and high distance subgroups are $\bar{r}_c = -0.12$ (95% CI is -0.25 to 0.02) and $\bar{r}_c = -0.11$ (95% CI is -0.24 to 0.02) respectively. Both relationships are heterogeneous. A Z-test showed that there was no difference between means ($Z = -0.198$, $p = 0.42$). Second, the weighted linear regression was overall insignificant ($F = 0.400$). Third, we ran an OLS regression of a mean level of perceived cultural distance for a sample on a dichotomized independent variable that took a value of 1 if the correlation coefficient was positive, and 0 otherwise. The regression beta-coefficient was not significant. Thus, currently there is no evidence that the strength of the perception of cultural differences moderates the *cultural distance - performance* relationship in the studies included in our meta-analysis.

Age of alliances. We tested whether the mean age of alliances in the studies which reported positive correlations between cultural distance and performance, was different from the mean age

of the alliances in the studies which reported negative correlations. To do this, we performed OLS with age as a dependent variable and a dichotomized independent variable that took a value of 1 if the correlation coefficient was positive, and 0 otherwise. In studies analyzing the *Kogut and Singh's measure of cultural distance – performance* relationship as well as in studies reporting *perceptual measure of cultural distance – performance*, both the intercepts and the beta-coefficients were positive and significant (for Kogut and Sing's measure $R^2=0.30$, $p=0.02$, $\beta=3.56$; for perceived cultural distance $R^2=0.48$, $p=0.01$, $\beta=2.76$). This suggests that older alliances tend to achieve positive relationships between cultural distance and performance, while those alliances that experience a negative effect of cultural distance tend to be younger.

Publication year. We observed that with only one exception, studies published before 2009 reported positive correlation coefficients for the *Kogut and Singh's measure of cultural distance – performance* relationship, while starting from 2009, studies report both positive and negative correlation coefficients. In the case of the *perceptual measure of cultural distance – performance* relationship the majority of reported correlation coefficients were negative. Thus, we ran two OLS regressions of cultural distance and of age with a dichotomized independent variable that took value of 1 if a study was published in 2009 or later (it roughly corresponds to samples being collected before 2002-2003), and 0 otherwise. Our results showed that studies published in these two intervals of time did not differ with respect to cultural distance. However, they differed with respect to the age of alliances ($p=0.11$, $R^2=0.15$, $\beta=-2.51$). Samples analyzed in studies published before 2009 (samples collected before 2002-2003) included alliances that were on average slightly older than those in samples of studies published in 2009 or later (10.1 years and 7.6 years respectively).

Thus, the results of a hierarchical moderator analysis for the relationship *cultural distance – performance* can be summarized in following way:

1. Measures of cultural distance moderate the *cultural distance – performance* relationship.
2. The relationships *binary measure of cultural distance – performance* and *perceptual measure of cultural distance – performance* are further moderated such that the directionality of these relationships depends on these moderators.
3. Currently, there is no clear statistical evidence that the measures of performance used in the studies included in our meta-analysis moderate the effect of any measure of cultural distance on *performance*. However, since some subgroups became more homogenous, while others became more heterogeneous, the final conclusion regarding the moderating ability of performance measures can be done only when other potential moderators have been identified.

4. Keeping in mind the presence of other moderators, the relationship *binary measure of cultural distance - performance* tends to be more positive than negative, whereas the relationship *perceptual measure of cultural distance – performance* tends to be more negative than positive.
5. The age of strategic alliances likely moderates the effect of cultural distance on performance, such that older alliances tend to exhibit a positive association between the extent of cultural distance and performance.

4.5.2. Results for Processes and Process-Related Factors and Performance

Relationship of processes and process-related factors with performance (baseline hypothesis 2a-e). Five relationships were analyzed under this hypothesis: (a) *interorganizational commitment – performance*; (b) *transparency of information exchange – performance*; (c) *disagreements – performance*; (d) *trust – performance* and (e) *learning – performance*. Results of the meta-analyses are presented in table 4-3.

As expected, *interorganizational commitment* and *transparency of information exchange* were positively associated with performance and *disagreements* was negatively related to performance. For *interorganizational commitment*, the mean corrected correlation is $\bar{r}_c = 0.50$ (CI is 0.42 to 0.58), for *transparency of information exchange* $\bar{r}_c = 0.40$ (CI is 0.32 to 0.48), and for *disagreements* $\bar{r}_c = -0.24$ (CI is -0.32 to -0.16). The relationships between commitment and transparency with performance are heterogeneous according to chi-square test for heterogeneity (Q=166.48, p=0.00 and Q=54.29, p=0.00 respectively), the percent of variance accounted for is low, but their credibility intervals do not include zero (CR is 0.27 to 0.73 and 0.23 to 0.57 respectively). Thus, the magnitude but not the sign of correlations of *commitment* and *transparency* with performance may depend on context and therefore, the search for moderating variables is recommended. The relationship with disagreements is homogenous according to all criteria: the chi-square test for heterogeneity is Q=11.48 p=0.19, the percent of variance accounted for is 82%, and the credibility interval do not include zero (CR is -0.31 to -0.17).

We have found that, as expected, both *trust* and *learning* are positively and significantly related to *performance* ($\bar{r}_c = 0.51$ CI is 0.43 to 0.59 and $\bar{r}_c = 0.41$ CI is 0.33 to 0.49). Both relationships are heterogeneous (Q=200.00, p=0.00 and Q=38.800, p=0.00) but without zero in the credibility intervals. The search for moderating variables is needed to discover contexts across which the magnitudes of the correlation coefficients vary.

Overall, the relationships analyzed supported the baseline hypothesis 2a-e.

Moderator Analysis of the Relationships of Processes and Process-related Factors with Performance by Performance Measures. We analyzed whether measures of performance can explain the heterogeneity in the relationships of commitment, transparency, learning and trust with performance. The results of the Z-tests of differences are presented in table 4-6.

The *interorganizational commitment – performance* relationship. Past studies used all four measures of performance. The results of the Z-tests of differences show that all the relationships except one were different. Thus, the correlation between *commitment* and the *multidimensional* performance measure was statistically larger than with *financial* measure ($Z=2.77$, $p=0.00$), which in turn was larger than with *overall* ($Z=2.03$, $p=0.02$) and *goal achievement* ($Z=3.88$, $p=0.00$) measures of performance. There were no statistically significant differences between correlations with *overall* and *goal achievement* measures.

Interorganizational commitment is positively related to all measures of performance (meta-analytic results are reported in table 4-3). The mean corrected correlation ranges from $\bar{r}_c = 0.30$ for the *goal achievement* measure of performance to $\bar{r}_c = 0.56$ for the *multidimensional* measure of performance. The percent of variance exceeded the 75% threshold for the relationships with the *overall* and *goal achievement* measures, while did not change much for relationships with the *multidimensional* and *financial* measures. Thus, our results suggest that performance measures may moderate the *interorganizational commitment – performance* relationship. Taking into consideration that the relationships with *multidimensional* and *financial* measures remained heterogeneous (although without zero in credibility intervals), other moderators which affect magnitude but not the sign of correlations are also possible. Overall, the relationship *interorganizational commitment – performance* supports the baseline hypothesis 2a.

The *disagreements – performance* relationship. Past studies used overall, multidimensional, and goal achievement measures of performance. As this relationship is homogenous we did not expect to find significant differences between the correlations with the various performance measures. Indeed, the results of the Z-tests of differences show that there are no statistically significant differences between measures of performance. Our results rule out the possibility of moderation by performance measures.

As reported in table 4-3, *disagreements* were negatively related to all performance measures (no data for financial measure) and there were no statistically significant differences between them.

The mean corrected correlation ranges from $\bar{r}_c = -0.28$ with *overall performance* to $\bar{r}_c = -0.15$ for *goal achievement measures*. All three relationships are homogenous. Overall, our findings for the relationship *disagreements – performance* support the baseline hypothesis 2c.

The *transparency of information exchange – performance* relationship. Past studies used all four measures of performance. According to the results of the Z-tests of differences, the effect of *transparency* on the *multidimensional* measure of performance was larger than for the *goal achievement* measure ($Z=5.80$, $p=0.00$), which in turn was larger than for the *overall* and *financial* measures of performance ($Z=3.23$, $p=0.00$ and $Z=3.39$, $p=0.00$ respectively). The effects of *transparency* on the *overall* and *financial* measures were not different from each other. The percent of variance accounted for increased in each of the four cases and for the *overall* and *goal achievement* measures, exceeded the 75% threshold. Thus, according to the currently available evidence, performance measures may moderate the *transparency of information exchange – performance* relationship.

As reported in table 4-3, two out of four relationships were significant and in the expected direction. Thus, *transparency* was significantly and positively related with *multidimensional* ($\bar{r}_c = 0.42$) and *goal achievement* ($\bar{r}_c = 0.35$) measures of performance. The confidence and credibility intervals supported this conclusion. The relationship of *transparency* with *overall* measure of performance was homogeneous ($Q=2.23$, $p=0.14$) and statistically insignificant (CI is -0.03 to 0.26). The relationship of *transparency* with the *financial* measure of performance was not significant (CI is 0.00 to 0.30); however, it was heterogeneous ($Q=7.17$, $p=0.03$) without zero in the credibility interval (CR 0.02 to 0.27) and therefore supports the hypothesis in some contexts. Thus, the baseline hypothesis 2b is partly supported.

The *trust – performance* relationship. Four measures of performance were used in past research: overall, multidimensional, financial, and goal achievement. The results of the Z-tests of differences showed that most of the pairs were statistically different from each other. The relationships that were not different from each other ($Z=1.11$, $p= 0.13$) were of *trust* with the *financial* and *goal achievement* measures of performance ($\bar{r}_c = 0.37$ CI is 0.17 to 0.57 and $\bar{r}_c = 0.29$ CI is 0.22 to 0.35 respectively). For the *multidimensional* and *overall* measures of performance, the mean corrected correlations were $\bar{r}_c = 0.62$ (CI is 0.54 to 0.70) and $\bar{r}_c = 0.46$ (CI is 0.30 to 0.61). Our findings suggest that measures of performance moderate *trust – performance* relationship.

As reported in table 4-3, all four relationships were significant and in the expected direction. All relationships except one were heterogeneous without zero in the credibility intervals. That is, the magnitude but not the sign of the mean corrected correlations depend on context. The exception is the relationship of *trust* with the *goal achievement* measure of performance, which was homogenous according to all three criteria. Thus, according to our results all relationships support the baseline hypothesis 2d.

The *learning – performance* relationship. Three performance measures were used in past research: overall, multidimensional and financial. The results of the Z-test of differences showed that there were no significant differences between the mean corrected correlations of *learning* with these measures of performance. The mean corrected correlation for the relationship *learning – overall performance measure* is $\bar{r}_c = 0.42$ (CI is 0.22 to 0.62), and for the relationship *learning – multidimensional performance measure*, $\bar{r}_c = 0.37$ (CI is 0.28 to 0.47). For the *learning – financial performance measure* $\bar{r}_c = 0.34$ (CI is 0.24 to 0.45). Interestingly, although according to the Z-tests of differences the measures of performance do not moderate the *learning - performance* relationship, the percent of variance accounted for increased in last two relationships. Thus, although currently there is no evidence that measures of performance moderate the relationship *learning – performance*, it is worth verifying such a possibility again as more empirical studies reporting on this relationship become available.

As reported in table 4-3, the mean corrected correlations for these three relationships are significant and in the expected direction. Two out of three relationships are homogeneous. The only heterogeneous relationship is *learning – overall measure of performance*. However, since its credibility interval does not contain zero (CR is 0.20 to 0.64), only the magnitude but not the sign of the mean corrected correlation depends on context. Thus, according to our results the three relationships analyzed support the baseline hypothesis 2e.

Overall, baseline hypothesis 2 is supported for relationships of

- a) *interorganizational commitment* with all measures of performance,
- b) *transparency of information exchange* with all performance measures except overall performance.
- c) *disagreements* with all measures of performance (no data for a financial measure of performance),
- d) *trust* with all measures of performance

e) *learning* with all measures of performance (no data for a goal achievement measure performance).

The baseline hypothesis 2b is rejected for the relationships *transparency of information exchange – overall performance*.

4.5.3. The Mediating Role of Processes and Process-Related Factors in the Relationship Cultural Distance - Performance

To verify the ability of processes and process-related factors to mediate the effect of *cultural distance* on *performance* we must consider the relationships tested below together with the results from testing hypotheses 1 and 2 that were described above.

The Relationships of Cultural Distance with Processes and Process-related Factors (Hypothesis 3a-e). Five relationships were analyzed under this hypothesis: (a) *cultural distance – interorganizational commitment*; (b) *cultural distance – transparency of informational exchange*; (c) *cultural distance – disagreements*; (d) *cultural distance – trust*; and (e) *cultural distance – learning*. Results of the meta-analysis are reported in table 4-2.

The relationship *cultural distance - commitment* is heterogeneous according to the chi-square test for heterogeneity ($Q=68.91$, $p=0.00$) and the percentage of variance accounted for (28%), and the credibility interval includes zero (CR is -0.26 to 0.13). Therefore, both the sign and magnitude of the mean corrected correlation may depend on context. The absence of statistically significant results for this relationship ($\bar{r}_c = -0.06$, 95% CI is -0.15 to 0.02) may be due to the work of moderating factors. The search for moderating variables is necessary for determining in which contexts the directionality of the effect can change from negative to positive.

The relationship *cultural distance – transparency* is statistically significant ($\bar{r}_c = -0.10$ (95% CI is -0.20 to -0.01), but heterogeneous according to the chi-square test for heterogeneity ($Q=42.33$, $p=0.00$) and the percentage of variance accounted for (33%), and its credibility interval includes zero (CR is -0.30 to 0.09). Therefore, as in the previous case, the search for moderator variables is necessary.

The relationship *cultural distance – disagreements* is statistically significant ($\bar{r}_c = 0.34$, 95% CI is 0.16 to 0.52). This relationship is heterogeneous ($Q=30.00$, $p=0.00$), but without zero in the credibility interval (CR is 0.08 to 0.60). Therefore, only its magnitude may change with the

context, while the sign remains unaffected. The search for moderating variables is necessary to understand which contexts may aggravate conflicts.

The relationship *cultural distance – trust* is statistically significant ($\bar{r}_c = -0.10$, 95% CI is -0.16 to -0.04). This relationship is heterogeneous ($Q=46.97$ $p=0.00$), with zero in the credibility interval (CR is -0.23 to 0.04). Therefore, both its magnitude and the sign may vary from one context to another. So, the search for moderators is indicated.

The relationship *cultural distance - learning* is heterogeneous according to the chi-square test for heterogeneity ($Q=35.52$, $p=0.00$) and the percentage of variance accounted for (31%), and the credibility interval includes zero (CR is -0.23 to 0.11). Therefore, both its sign and magnitude may depend on context. The absence of statistically significant results for this relationship ($\bar{r}_c = -0.06$, 95% CI is -0.15 to 0.04) may be due to the work of moderating factors. The search for moderating variables is necessary.

To summarize, only one out of the five relationships tested supports hypothesis 3 across contexts. This relationship is of cultural distance with disagreements. The directionality of all other relationships is contextually dependent, that is, in some contexts these relationships will not support hypothesis 3. Moderator analysis is needed.

Moderation of Relationships of Cultural Distance with Processes and Process-related Factors through Measures of Cultural Distance. Measures of cultural distance may vary in their capacity to capture the extent of difficulties partners face while dealing with their mutual cultural differences in everyday situations. Taking into consideration that moderator analysis is indicated for all five relationships described above, we analyzed whether the cultural distance measures can serve as such. Table 4-6 shows the results of the moderator analysis.

Cultural distance – interorganizational commitment. As it was reported above, this relationship is not statistically significant, with zero in the credibility interval. Past studies used three measures of cultural distance: binary, Kogut and Singh's, and perceptual. When correlations were grouped by measures of cultural distance, the following results emerged: The relationship of *Kogut and Singh's cultural distance* measure with commitment is statistically insignificant ($\bar{r}_c = -0.01$, 95% CI is -0.05 to 0.03) and homogenous. Percent of variance accounted for in this relationship increased to 100%. The relationships of *binary* and *perceptual cultural distance* measures with commitment remained heterogeneous with zero in credibility intervals (CRs are -0.06 to 0.10 and -0.43 to 0.16

respectively). The results of the Z-test of differences showed that the correlation between *binary measure* and interorganizational commitment is statistically different from the correlation between *perceptual measure* and interorganizational commitment ($Z=3.25$, $p=0.00$). In two out of three relationships – that of binary and Kogut and Singh’s measures of cultural distance – the percent of variance accounted for increased as a result of subgroup analysis. Thus, we concluded that measures of cultural distance indeed moderate the relationship *cultural distance – interorganizational commitment*, although other moderators are present. Judging by credibility intervals, a *binary measure* of cultural distance has a largely positive, while a *perceptual measure* has a largely negative effect on interorganizational commitment.

Cultural distance – transparency of information exchange. As it was reported, this relationship is negative and statistically significant but heterogeneous and its credibility interval includes zero. So, the search for moderators is indicated. Past studies relied on three measures of cultural distance: binary, Kogut and Singh’s, and perceptual. The results of the moderator analysis by measures of cultural distance showed the following: The relationship of *binary* cultural distance measure with transparency remains negative, statistically significant, and heterogeneous but without zero in credibility interval ($\bar{r}_c = -0.21$ CR is -0.36 to -0.07). The relationship of *perceptual* cultural distance measures with transparency of information exchange is statistically insignificant, and heterogeneous with zero in credibility interval ($\bar{r}_c = -0.14$ CR is -0.39 to 0.10). The correlation between the transparency of information exchange and *Kogut and Singh’s measure* of cultural distance is not significant (95% CI is -0.04 to 0.04) and homogenous, and is statistically different from (weaker) the correlations with *binary* or *perceptual measures* ($Z=-3.31$, $p=0.00$ and $Z=-2.28$, $p=0.01$ respectively); the last two relationships are not different from each other ($Z=-1.26$, $p=0.11$). As in the case above, in two out of three relationships – that of binary and Kogut and Singh’s measures of cultural distance – the percent of variance account for increased. Hence, we concluded that measures of cultural distance can moderate the relationship *cultural distance – transparency*. The relationship *Hofstede’s measure of cultural distance - transparency* is not moderated by measures of cultural distance.

Cultural distance – disagreements. As it was reported above, this relationship is positive, statistically significant, and heterogeneous without zero in the credibility interval. Past studies relied only on two measures of cultural distance: Kogut and Singh’s and perceptual. When the studies were grouped by these two measures, the percent of variance accounted for increased in both groups. The relationship of *Kogut and Singh’s measure* with disagreement became homogenous ($Q=2.03$, $p=0.15$), while the relationship with *perceived cultural distance* remained

heterogeneous ($Q=19.94$, $p=0.00$). The mean corrected correlation of disagreements with *Kogut and Singh's measure* ($\bar{r}_c = 0.17$ 95% CI is 0.03 to 0.31) is statistically different from (weaker) that of the relationship with *perceived measure* ($\bar{r}_c = 0.45$ 95% CI is 0.24 to 0.66) of *cultural distance* ($Z=-3.84$, $p=0.00$). Therefore, we concluded that measures of cultural distance moderate the relationship *cultural distance – disagreements*. The relationship *perceived cultural distance measure – disagreements* is further moderated by other factors. Interestingly, *Kogut and Singh's measure of cultural distance* is positively and significantly associated with disagreements and the relationship is homogenous.

Cultural distance – trust. As it has been described earlier, this relationship is statistically insignificant and heterogeneous according to all three criteria. Past studies relied on three measures of cultural distance: binary, Kogut and Singh's, and perceptual. The results of moderator analysis show the following: The relationship of a *binary* measure of cultural distance with trust becomes statistically insignificant ($\bar{r}_c = -0.01$ 95% CI is -0.07 to 0.05) and homogenous. The relationship of a *perceptual* cultural distance measure with trust is negative, statistically significant, and heterogeneous without zero in credibility interval ($\bar{r}_c = -0.21$ 95% CI is -0.32 to -0.10 CR is -0.39 to -0.03). The mean corrected correlation between trust and *Kogut and Singh's measure of cultural distance* is negative, significant ($\bar{r}_c = -0.07$ CI is -0.11 to -0.03) and homogenous. Keeping in mind the heterogeneity of the effect of a *perceptual* measure of cultural distance on trust, the results of Z-tests of differences show that it is significantly more strongly related to trust than either *binary* or *Kogut and Singh's measures* ($Z=5.11$, $p=0.00$ and $Z=3.40$, $p=0.00$ respectively); the last two are not different from each other ($Z=1.31$, $p=0.09$). Hence, we concluded that measures of cultural distance moderate the relationship *cultural distance – trust*. The relationship *perceptual measure of cultural distance – trust* is further moderated.

Cultural distance – learning. As it has been described earlier, this relationship is statistically insignificant and heterogeneous according to all three criteria. Past studies relied on three measures of cultural distance: binary, Kogut and Singh's, and perceptual. The results of the moderator analysis show the following: The relationship between a *binary* measure of cultural distance with learning is positive, statistically significant ($\bar{r}_c = 0.10$ 95% CI is -0.06 to 0.13), and homogenous according to all three criteria. The relationship between a *perceptual* cultural distance measure with learning is negative, statistically significant ($\bar{r}_c = -0.23$ 95% CI is -0.33 to -0.14), and homogenous according to all three criteria. The mean corrected correlation between learning and *Kogut and Singh's measure of cultural distance* is statistically insignificant ($\bar{r}_c = -0.09$

95% CI is -0.20 to 0.02) and heterogeneous based only on the percent of variance accounted for (66%). According to Z-tests of differences, all three measures are different from each other. Hence, we concluded that measures of cultural distance moderate the relationship *cultural distance – learning*. It is possible that other factors exist that moderate the relationship with *Kogut and Singh's* measure. As more empirical studies become available, this possibility should be explored.

The results of our analysis showed that processes and process-related factors may mediate the relationships of binary and perceptual measures of cultural distance with performance. Specifically,

a) interorganizational commitment mediates relationships

- between a *binary measure* of cultural distance and performance; specifically, its *overall* and *multidimensional measures* (no data for relationships between a binary measure of cultural distance and other measures of performance).
- between a *perceptual measure* of cultural distance and performance; specifically, its *overall*, *multidimensional* and *financial measures*.

b) disagreement mediates the relationship between a *perceptual measure* of cultural distance and performance; specifically, its *overall*, *multidimensional* and *goal achievement measures* (no data for the relationships between disagreements and a financial measure of performance and between a binary measure of cultural distance and disagreements).

c) transparency mediates relationships:

- between a *binary measure* of cultural distance and performance; specifically, its *overall* and *multidimensional measures* (no data for the relationships between transparency and a goal achievement measure of performance, and between a binary measure of cultural distance and financial and goal achievement measures of performance).
- between a *perceptual measure* of cultural distance and performance; specifically, its *overall*, *multidimensional*, and *financial measures*.

d) trust mediates the relationship between a *perceptual measure* of cultural distance and performance; specifically, its *overall*, *multidimensional* and *financial measures*.

e) learning mediates relationships:

- between a *binary measure* of cultural distance and performance; specifically, its *overall* and *multidimensional measures* (no data for the relationships of a binary measure of cultural distance with financial and goal achievement measures of performance).
- between a *perceptual measure* of cultural distance and performance; specifically, its *overall*, *multidimensional*, and *financial measures*.

Kogut and Singh's index of cultural distance influences the *overall measure* of performance very weakly (no data for its effect on a goal achievement measure of performance). This effect, if any, can be transmitted by disagreements, trust, and learning.

As it can be seen in the previous paragraphs, some relationships have not been tested in the empirical studies included in our meta-analysis. As a result, due to the lack of data, we cannot test following mediational effects:

- whether any of the process or process-related factors mediate the relationships of a binary measure of cultural distance and financial and goal achievement measures of performance, as well as between Kogut and Singh's index of cultural distance and a goal achievement measure of performance.
- whether disagreements mediate relationships between any measure of cultural distance and financial performance, and between a binary measure of cultural distance and any measure of performance.
- whether transparency mediates the relationships between any measure of cultural distance and a goal achievement measure of performance.

4.5.4. Summary of Results for Cultural Distance

Currently available empirical evidence allows us to make following conclusions about the effect of cultural distance on processes, process-related factors, and performance:

Different measures of cultural distance vary in their ability to capture its effect on performance, processes, and process-related factors. Specifically, Kogut and Singh's index of cultural distance based on Hofstede's dimensions has a very weak ability (if any) to capture the direct effect of cultural distance on (any measure of) performance. However, it has been proven to affect performance indirectly by heightening disagreements and reducing trust, and (most likely) learning. Interestingly, with a good level of confidence we can say that neither commitment nor transparency seems to be affected by the extent of the cultural differences between partners measured through Kogut and Singh's index. As it has been shown in chapter 3, these two characteristics are strongly related to the mutual engagement dimensions of the process, encompassing informal sense-making and formal planning activities as well as being strongly related to structural design factors.

A perceptual measure of cultural distance seems to reflect the effects of cultural distance the strongest. Although the directionality of its effect on performance and some processes may depend on context, the magnitude of the possible negative effects is much larger than the magnitude of positive effects: the distribution of population correlations is skewed to the left. The negative effect

on performance captured by a perceptual measure of cultural distance can be transmitted to lower relative quality of all processes (i.e., commitment, disagreements, and transparency) and all process-related factors (i.e., learning and trust). Its positive effect on performance, if it really exists (the upper limit of the credibility interval is very close to zero), can be conveyed to commitment and transparency. The possibility of positive effect should be taken with caution, seeing as its magnitude is low.

Cultural distance (either Kogut and Sing's index or a perceptual measure) influences processes and process-related factors differently. Thus, disagreements, learning, and trust are worsened by cultural distance, whereas commitment and transparency are less sensitive to these cultural distance measures and can even be influenced positively in some contexts.

Kogut and Singh's index and a perceptual measure of cultural distance are conceptually similar (akin to the overall and multidimensional measures of performance). However, as it has been shown through Z-tests of differences, Kogut and Singh's index produces a much weaker correlation related to the processes and process-related factors. One possible explanation is that not all aspects of national culture measured by Hofstede's dimensions are relevant to the quality of processes and process-related factors.

A binary measure of cultural distance seems to reflect the effects of other antecedents of performance and processes in addition to the effect of cultural distance. Although the directionality of its effects on performance may vary with context, it tends to be largely positive: the distribution of the population correlations is skewed to the right. The positive effect captured by this measure of cultural distance can be transmitted by commitment and learning and is not transmitted by trust or transparency. In a context where this effect turns negative, it is conveyed as lowered commitment and transparency. We have not identified any study reporting whether being international affects the level of disagreements in an alliance.

The following relationships have escaped scientists' attention: a binary measure of cultural distance with financial and goal achievement measures of performance; Kogut and Singh's index of cultural distance with a goal achievement measure of performance; and binary measure of cultural distance with disagreements. Operational performance and process performance are underresearched: very few studies focus on these dimensions of performance.

4.5.5. Results for Mutual Experience and Performance

Our findings suggest that *mutual experience* and *performance* are significantly related $\bar{r}_c = 0.13$ (95% CI is 0.07 to 0.18), however, the relationship is heterogeneous. The percent of variance accounted for by artifacts is only 38%, the chi-square test for heterogeneity is significant ($Q=57.82$, $p=0.00$), and the credibility interval includes zero (CR is -0.02 to 0.27). Thus, the magnitude and the sign of the correlation depend on context. We cannot reject hypothesis 4, however, the search for moderating factors is necessary to verify in which contexts, contrary to hypothesized, the effect of mutual experience on performance can become negative.

Moderator Analysis of the Mutual Experience – Performance Relationship through Measures of Mutual Experience. Researchers measured mutual experience in number of ways: as a categorical variable reflecting the presence or absence of mutual experience, or as a continuous variable based on years of collaboration, a count of previous mutual alliances, or a combination of these two. We grouped these measures into two categories: binary and continuous measures. The result of Z-tests of differences (see table 4-6) showed that there is no statistically significant difference between subgroups ($Z=-0.37$, $p=0.36$). The percent of variance accounted for has not changed much in either group and the Q statistics of the chi-square test for heterogeneity showed that the relationships remain heterogeneous ($Q=26.31$, $p=0.00$ and $Q=30.07$, $p=0.00$ respectively). Thus, the scale on which mutual experience is measured – whether it is binary or continuous – cannot explain the excess of variation.

Moderator analysis of the relationship mutual experience – performance through measures of performance. Additionally, we tested whether measures of performance can influence the strength of the relationship between mutual experience and performance. Studies included in our meta-analysis used four measures of performance: overall, multidimensional, financial, and goal achievement. The results of the Z-tests of differences (table 4-6) showed that the relationships of mutual experience with *overall* and with *multidimensional* measures of performance were not significantly different from each other ($Z=0.213$, $p=0.03$), while all other types of performance measures were different from each other. The relationship of mutual experience with a *financial* measure is stronger than that with either *overall* or *multidimensional* measures, which in turn are stronger than that of a *goal achievement* measure of performance. The percent of variance accounted for increased for all four relationships to various extents. However, only the relationship with a *financial measure* of performance became homogenous. Thus, these results indicate that measures of performance may moderate the *mutual experience – performance* relationship,

however, other moderators cannot be excluded. Below are the results of the meta-analyses for each performance measure.

Mutual experience is positively and significantly related to all performance measures except for *goal achievement*. Mean corrected correlations range from $\bar{r}_c = 0.34$ (for a *financial performance measure*) to $\bar{r}_c = 0.17$ (for an *overall performance measure*) to $\bar{r}_c = 0.16$ (for a *multidimensional performance measure*). The relationship with a *financial* measure of performance is homogenous according to the chi-square test for heterogeneity ($Q=0.07$, $p=0.79$) and the percent of variance accounted for is 100%. The relationships with *overall* and *multidimensional performance measures* are heterogeneous according to chi-square tests ($Q=11.25$, $p=0.02$ and $Q=21.19$, $p=0.03$ respectively), but their credibility intervals do not include zero (CR is 0.03 to 0.32 and CR is 0.06 to 0.26 respectively). Therefore, their magnitudes may depend on context, but the signs remain positive. The relationship with a *goal achievement measure of performance* is not statistically significant (95% CI is -0.15 to 0.10). The absence of statistically significant results for this relationship should be questioned because it is heterogeneous according to all three criteria (the chi-square test, the percentage of variance accounted for, and the width of the credibility interval), and therefore, both its sign and magnitude may depend on the context. The search for moderating variables is necessary.

Thus, for the relationships of *mutual experience* with *overall*, *multidimensional* and *financial measures of performance* we did not reject the hypothesis 4. The relationship of *mutual experience* with a *goal achievement measure of performance* supports hypothesis 4 only in some contexts.

The results of both moderator analyses for the relationship *mutual experience – performance* showed that measures of mutual experience do not moderate, while measures of performance moderate this relationship, however other moderators may exist.

4.5.6. Mediating Role of Processes and Process-Related Factors in the Relationship Mutual Experience - Performance

To establish the possibility of the mediating effect of processes and process-related factors on the *mutual experience – performance* relationship, we had to consider the relationships tested below (hypothesis 5) together with the results from testing hypotheses 4 and 2 that were described above.

Four relationships were tested under hypothesis 5: (a) *mutual experience – interorganizational commitment*; (b) *mutual experience – transparency of information exchange*; (c) *mutual experience*

– *trust*; and (d) *mutual experience – learning*. We could not test the relationship *mutual experience – disagreements* due to the lack of data. The results of the meta-analysis are reported in table 4-4 and presented below.

Mutual experience is significantly and positively related to *interorganizational commitment* ($\bar{r}_c = 0.13$ (95% CI is 0.07 to 0.18)). This relationship can be considered heterogeneous based on the percent of variance accounted for (62%), which is slightly lower than 75% and on chi-square test for heterogeneity ($Q=19.85$, $p=0.05$). However, its credibility interval do not contain zero (CR is 0.04 to 0.21). Therefore, only the strength but not the directionality of the corrected correlation depends on context.

Mutual experience is not significantly related to the *transparency of information exchange* ($\bar{r}_c = 0.05$ (95% CI is -0.01 to 0.12)). This relationship is homogenous according to the chi-square test for heterogeneity ($Q=9.7$, $p=0.38$), and the percent of variance accounted for was 100%.

Mutual experience is significantly and positively related both to *learning* ($\bar{r}_c = 0.12$ 95% CI is 0.05 to 0.18) and *trust* ($\bar{r}_c = 0.13$ (95% CI is 0.06 to 0.21)). The first relationship is homogeneous according to the chi-square test for heterogeneity ($Q=3.35$, $p=0.50$) and the percent of variance accounted for (100%). The second relationship is heterogeneous according to all three criteria: the Q statistics of the chi-square test for heterogeneity is significant ($Q=59.31$, $p=0.00$), the percent of variance accounted for is quite low (29%), and the credibility interval includes zero (CR is -0.03 to 0.30). Thus, its magnitude and the sign may depend on context.

Moderation by measures of mutual experience. We have analyzed whether measures of mutual experience can moderate the relationship of *mutual experience* with *commitment*, *learning*, and *trust*. Although the relationship *mutual experience – learning* did not require a moderator analysis, it was interesting to compare the ability of binary and continuous measures to capture variation.

After the correlations were grouped by measures of mutual experience, we attained the following results for the *mutual experience – commitment* relationship: According to the Z -test, there were no statistically significant differences between the mean values of the corrected correlations for these subgroups ($Z=0.416$, $p=0.34$). The percent of variance accounted for did not improve. Thus, the way mutual experience was measured cannot account for the excess of variation in the relationship *mutual experience - commitment*.

For the relationship *mutual experience – learning*, the result of the Z-test of differences showed that differences between subgroups were not statistically significant ($Z=-1.41$, $p=0.08$), although a continuous measure of mutual experience had a stronger effect. The absence of statistical significance may be caused by the small number of studies per subgroup ($k=2$ for binary and $k=3$ for continuous measure).

For the relationship *mutual experience – trust*, binary measures resulted in statistically significantly weaker correlations than with continuous measures ($Z=-4.07$, $p=0.00$). The relationship with binary measures remained heterogeneous according to the chi-square test for heterogeneity ($Q=16.63$, $p=0.00$) and the percent of variance accounted for (30%), and it had zero in the credibility interval (CR is -0.10 to 0.18). The relationship with a continuous measure of mutual experience remained heterogeneous as well ($Q=28.45$, $p=0.00$), but without zero in the credibility interval (CR is 0.06 to 0.33). Thus, the results of our analysis showed that it was not possible to rule out the possibility of moderation by measure of mutual experience of relationships of *mutual experience* with *learning* and *trust*. However, other moderators were also present.

Overall, the results of our analysis showed that commitment, trust, and learning may mediate the effects of mutual experience on performance. This is so for all measures of performance given that the relationship is positive. In some contexts the effect of mutual experience on a goal achievement measure of performance may turn negative. In such contexts the negative effect may be mediated by trust.

4.5.7. Summary of Results for Mutual Experience

The currently available empirical evidence on the relationship between mutual experience, processes and process-related factors, and performance allows us to make following conclusions:

Mutual experience is positively, albeit with varying strength, related to different measures of performance, except for goal achievement. Its effect on a financial measure of performance is the strongest; its effects on overall and multidimensional measures of performance are not different from each other in magnitude. The directionality of the effect on a goal achievement measure of performance depends on context, which suggests that more empirical research and a moderator analysis focusing on this measure of performance should be performed.

Our findings suggest that the effect of mutual experience on performance can be transmitted via commitment, learning, and trust. When the relationship turns negative, it can be mediated only by

trust. Transparency does not mediate this relationship to any extent because it is not significantly related to mutual experience. Surprisingly, we could identify only one study focusing on the relationship of mutual experience with disagreements (Luo, 2006) and therefore, no conclusion could be reached.

The way mutual experience is measured (as a binary or continuous variable) affects neither the strength nor the directionality of its relationships with commitment, transparency, learning, and performance but was relevant for its relationships with trust. In some contexts, the effect of a binary measure on trust may turn negative. More quantitative studies and a search for moderating contexts are necessary.

4.6. DISCUSSION

Although both distance in national cultures and prior mutual experience between alliance partners have been studied extensively, no clear agreement about their effects on alliances exists because the empirical findings are conflicting and sometimes even counterintuitive. Previous meta-analytical studies have left some of the reasons for this unexplored. Thus, despite the extensive research, no clear understanding exists of whether these social structural factors influence performance and, if they do, which collaborative processes mediate this influence. Here we have provided a meta-analysis of the relationships of the factors characterizing social structure and process with performance and explored whether different specification of these constructs may be responsible for the conflicting findings.

Our study makes various contributions. *First*, we develop a *conceptual model* for the effect of social structural factors on alliance outcomes by combining the institutional logics and the social exchange perspectives. *Second*, by conducting a *meta-analysis* of the published empirical quantitative research on the topic, we offer better empirical evidence than any individual study can provide. Accumulating the findings of available quantitative studies is important given the fragmented nature of the literature (e.g., Reus and Rite, 2004; Hennart, 2006; Bell, den Ouden and Ziggers, 2006) and few attempts have been made at integrating this. *Third*, by conducting *moderator analyses* we offer explanations for some of the conflicting findings. *Forth*, we suggest *directions for further research* by identifying relationships that escaped scientists' attention.

4.6.1. Theoretical Framework

Current research on the role of national culture and prior mutual experience in alliance success is characterized by the variety of theoretical justifications used and a lack of understanding of mechanisms through which their effects occur. We have relied on the institutional logics and the social exchange perspectives to develop a framework that can encompass the majority of explanations scattered across various theories. This permits a better understanding of the mechanisms through which alliance social structure affects partners' collaborative efforts. Furthermore, by analyzing cultural distance and mutual experience and their different measures simultaneously we can determine whether our theoretical propositions hold true consistently across these alternative conceptualizations of social structure.

Different cultural origins and a lack of history of mutual interactions is reflected in the absence of shared values and norms. In line with the institutional logics perspective we have found that the absence of such a shared understanding reduces the quality of interactions and performance. Although, we found that the developmental attributes of relationships between partners can be affected by alliance social structural characteristics, it became evident that these are not the most important antecedents. We also found that the characteristics of the social relationships between partners in the ongoing alliance have a relatively stronger impact on alliance performance than exogenous characteristics to alliance social structural.

4.6.2. Cultural Distance

At first glance, our meta-analysis showed that cultural distance seems to have no impact on alliance performance. However, moderator analysis by measures of cultural distance has brought new insights. We have observed that all three measures of cultural distance have statistically different effects on performance. Although Kogut and Singh's index of cultural distance based on Hofstede's cultural dimensions has no effect on performance, both binary and perceptual measures of cultural distance do affect performance and, what is interesting, they affect it in opposite directions. A binary measure tends to have a largely positive effect, while a perceptual measure a largely negative effect on performance. These results can be caused by conceptual differences between these measures. A perceptual measure of cultural distance is based on subjective evaluations done by managers and is measured at the alliance level. Binary measures and Kogut and Singh's index of cultural distance are objective measures; both of them are measured at the country level. Below we discuss the possible implications of this.

Perceptual measure of cultural distance. This study is the first meta-analytic review of the effect of perceived cultural distance on performance¹⁶. We found a strong negative effect of this measure of cultural distance on performance. Our results are comparable with the results achieved by Reus and Rottig (2009) for studies conducted on IJVs ($\bar{r}_c = -0.18$). Additionally, we found that cultural distance measured by managerial perceptions is associated with stronger performance than either Kogut and Singh's index or a binary measure of cultural distance. This result can be caused from the ability of the perceptual measure of cultural distance to capture additional aspects of relationships, which cannot be captured by other (objective) measures. One possibility is that the perception on cultural distance captures partners' ability to deal with differences effectively¹⁷. Cultural differences that have surfaced and have not been bridged effectively are likely to result in persisting conflicts and disagreements and become highly notable dominant characteristics of the interactions or the salient feature of the situation. According to the institutional logics perspective, the salient features of the situation affect which institutional order out of those available will be activated. A persisting perception of differences is likely to trigger those orders that rely heavily on formal relationships. Reliance on formal relationships is costlier, and more time consuming, and allows for less flexibility and, thus, influences both the operational and financial areas of performance negatively. This goes in line with another proposition of the institutional logics perspective, which suggests that the partners' difference in national origins will result in reduced cooperation.

It is interesting to add that Reus and Rottig (2009) suggested that a strong correlation between the perceptual cultural distance measure and performance may be due to the response bias, which occurs when respondents are asked about cultural differences, incompatibilities, gaps, and other problems, rather than about culture in general. Although the response bias can to some extent inflate the magnitude of the negative effect of subjective measures of cultural distance, it cannot explain the change in the direction of the effect which occurred in the relationship with binary

¹⁶ Reus and Rottig (2009) have analyzed IJVs, while we have analyzed both contractual and equity alliances. Moreover, they categorized performance measures according to the way it has been measured, i.e. objective or subjective, and thus did not distinguish between domains of performance. We focused on domains of performance, i.e. overall, financial, etc.

¹⁷ If this is correct, then we should also expect to find that the correlation between perceived cultural distance and conflict is higher than the correlation between the two objective measures of cultural distance and conflict. For a binary measure of cultural distance, we cannot verify this proposition due to a lack of data; therefore, it can be regarded as a future research question. However, Kogut and Singh's index of cultural distance is indeed much more weakly associated with disagreements than a perceptual measure of cultural distance ($\bar{r}_c = 0.17$ and $\bar{r}_c = 0.45$ respectively). The same pattern is found for the relationships of cultural distance with process factors: the influence of objective measures of cultural distance is much weaker than the influence of subjective measures.

cultural distance measure and performance. Why does the binary measure have a positive effect on cultural distance? Reus and Rottig (2009) could not take the effect of a binary measure of cultural distance into account because they focused on IJVs only. That is, the change in the direction of the effect is more likely to be caused by conceptual differences than by the response bias.

Cultural distance measured by Kogut and Singh's index based on Hofstede's dimensions. Our results are comparable with the results attained by Reus and Rottig (2009) for IJVs. They have found a very weak association of Kogut and Singh's index with performance. In previous research, a Hofstede's-dimensions-based measure of cultural distance¹⁸ was used as a proxy for managers' perception of cultural distance (Kogut and Singh, 1988). If so, why, unlike the perceptual measure, does this measure not affect performance? The insignificant effect of Kogut and Singh's index of cultural distance can be interpreted in the following way: It has been noted that in the process of social interactions, individuals draw upon descriptive norms rather than upon injunctive norms. That is, they rely on real practices appropriate to specific context rather than on the ideal or generalized understanding of how things should be done. Practices are always tied to specific situations, i.e. to institutional orders. Although cultural similarity does not guarantee that partners will choose the same institutional order, it does help them to interpret each other's actions correctly and, if necessary, to initiate negotiations. Cultural distance, however, has a doubly negative effect on interactions between partners. First, it is more likely that culturally distant partners will choose different institutional orders. Second, even if they choose the same order, their behavior is still likely to be guided by different descriptive norms due to the simple fact of being from different countries. For example, two modern, developed neighboring countries have very similar general value hierarchies, but can still implement these values differently. As it was explained in previous sections, similar cultural ideals are frequently supported by different practices in different cultures. Since a Hofstede's-dimensions-based cultural distance measure mixes these two types of norms (Tung and Verbeke, 2010), it reflects both real practices (typical managerial perceptions and behavior) and "should be" behavior. Thus, Kogut and Singh's measure of cultural distance may suggest similarities (based on "should be" behavior) where in fact there are differences (in real practices). This could be the reason behind its insignificant effect on performance.

As a future research direction, it will be informative to evaluate the strength of the association between Kogut and Singh's index and perceptual measures of cultural distance, to see whether it is indeed close to zero. The majority of empirical studies collected for our meta-analyses relies on

¹⁸ Hofstede (1983: 89) defines culture as "the collective programming of the mind which distinguishes one group or category of people from another... the category of people is the nation".

only one measure of cultural distance. So, we cannot test how strong Hofstede's-dimensions-based versus perceptual measures of cultural distance are associated with each other. We have identified only one study - Dong and Glaister (2009) - that included both a perceptual measure and Kogut and Singh's index in their analysis. The correlation between these two measures was 0.03. Until the question about the validity of Kogut and Singh's index as a measure of cultural distance is resolved, it is recommendable to include alternative objective measures of cultural distance in analysis.

Binary measure of cultural distance. Earlier meta-analyses did not examine this measure of cultural distance. In contrast to a perceptual measure of cultural distance, a binary measure is characterized by a broader conceptual scope. It can reflect other dimensions in addition to cultural differences, and these dimensions may positively contribute to alliance performance. For example, managers can value the knowledge and resources provided by international alliances more, and therefore will dedicate more attention to international projects (Zhang et al., 2010). Moreover, cultural distance is often instrumental in a decision to collaborate (Tung and Verbeker, 2012). International alliances provide access to new markets and financial resources, and widen the range of available complementary capabilities (Zhang et al., 2010; Inkpen and Beamish, 1997) that cannot be provided by domestic partners. All together it can provide a performance advantage for an alliance.

Since the excess of variation in the relationship of cultural distance – performance has not been completely explained by measures of cultural distance, we verified whether performance measures can account for the remaining variance. However, this step has not provided any additional insight. Currently available data suggests that the measures of performance used by researchers in the alliance field are not responsible for the variability in this relationship. Earlier meta-analyses provided comparable results. Thus, Reus and Rottig (2009) assessed the moderating effect of subjective vs. objective measures of performance but only for the *Kogut and Singh's index of cultural distance – performance* relationship. The magnitude of the difference found in their study was not practically important. The magnitudes of the mean effect sizes for composite, financial, and goal attainment measures of performance found in Krishnan and Cunha (2005) were also very close to each other¹⁹.

¹⁹ Krishnan and Cunha (2005) neither hypothesized this relationship nor conducted a moderator analysis of it. However, this information has been reported and we compare it with our results.

Although our data suggests no differences between the measures of the different domains of performance used by researchers in the alliance field, this does not mean that the constructs underlying these measures are not different. There is debate about the appropriate ways to measure alliance performance and its implications for construct validity (Christoffersen et al., 2014). Measures of performance differ with respect to the domains they characterize. In the alliance literature, the most frequently used measures are overall, multidimensional, and financial ones. The multidimensional and overall measures of performance represent the same construct. The multidimensional measure is operationalized as a collection of both internally and externally oriented activities which respondents evaluate, while overall performance is captured by a single question about aggregate performance across all domains. An operational measure of performance is not frequently used in the alliance research, thus we could not include it in our analysis. A goal achievement measure of performance is not related to any specific domain, rather it is a characteristic of collaborative activities. Another possible example is process performance, which was also used in very few studies and therefore could not be included in our meta-analysis. We have observed that while operationalizing alliance performance, researchers sometimes mix items representing different domains of alliance activities with items representing its characteristics²⁰. This may cause heterogeneity. In future research, measures of performance describing the domains and characteristics of collaborative activities should be clearly separated. In other words, one way to deal with the problem of heterogeneity in future research is to pay attention to the validity of performance measures.

4.6.3. Mutual Experience

Mutual alliance experience has a heterogeneous effect on performance. The moderator analysis of mutual experience measures – binary versus continuous – has shown that it does not affect the strength or directionality of the relationship. However, the moderator analysis by performance measures has provided additional insights. It reveals that mutual experience has the strongest impact on financial performance, while its impact on overall and multidimensional measures of performance is weaker. These results are comparable with those attained by Krishnan and Kunha (2005) although we do not know how they conceptualized mutual experience (whether it was alliance-specific or not). On one hand, this result should be taken with caution due to the small number of studies used to calculate the effect size for the financial measure of performance. On the other hand, this result may suggest that what is gained through previous experience is the ability to

²⁰ When we encountered such a measure we ascribed it to the category to which the majority of items belonged.

govern relationships, rather than the ability to perform task work, which is more closely related to operational performance. These results lend support to the idea that a previously developed mutual understanding may reduce the time and cost necessary to develop coordination and control routines, and therefore helps to economize on transaction costs. Moreover, the stronger association of mutual experience with financial performance may reflect the fact that the “market” has more confidence in such alliances, which can result in some economization, for example, reduced cost of capital.

The extent of the heterogeneity of the relationship *mutual experience – goal achievement measure of performance* points to the possibility of a negative effect in some contexts. Several explanations (theoretical and methodological) can be found in the research literature for this finding. One possibility is the transfer effect, which describes situations when the knowledge developed in one context is re-applied in a different context where it fails to produce intended results. Collaborative routines that have been developed in prior alliances can be less effective for achieving the goals of the new focal alliance. Yet, another possible explanation exists. Ring and Van de Ven (1994) described a situation when partners can become socially embedded and socially committed to each other to such an extent that they will not be able to take decisions about alliance termination despite unsatisfactory outcomes. Longer relationships are often associated with higher transaction-specific investments, which partners may want to preserve. Although plausible, these arguments do not clearly explain why only the goal achievement measure is negatively affected by mutual alliance experience.

From a methodological point of view, it can be useful to analyze whether this goal achievement measure reflects goals that are similar in nature. For example, the success of an alliance established for new product development depends on partners’ technical capabilities, while the success of a knowledge transfer alliance depends more heavily on process governance capabilities. An alliance formed for market access or financing depends on partners’ ability to create its formal structure right. Mutual experience is not likely to be equally helpful in all cases.

4.6.4. Processes and Process-related factors

Consistently with the social exchange perspective, a positive overtone of relationships expressed via commitment, transparency of information exchange, and trust positively contributes to alliance performance, while disagreements between partners contribute to performance negatively. As for the relative importance of these factors, our results show that trust and commitment have the

strongest influence on performance and are followed by the transparency of information exchange. The impact of disagreements is the weakest.

While judging the magnitude of the effect of processes and process-related factors on performance, it is useful to benchmark them against social structural factors. Compared to social structure factors, processes and process-related factors influence performance stronger. Given that social structure characteristics are initial conditions of an alliance, this result suggests that to counterbalance the possible negative effects of social structure on performance, partners can strengthen the internal processes leading to commitment, trust, and transparency since these are under partners' control.

Moderator analysis by performance measures has revealed an interesting fact: trust, commitment, and transparency have a stronger effect on multidimensional and/or overall measures of performance, while financial performance is affected by these variables slightly more weakly. As the overall and multidimensional measures reflect performance across both financial and operational domains, this result may suggest that trust, commitment, and transparency affect internal (operational) domains of alliance activities more strongly than external (financial) domains. It suggests that measures of performance are not interchangeable and therefore researchers should rely on a variety of different measures in their empirical analysis.

4.6.5. Mediation of the Effect of Social Structure on Performance by Processes and Process-Related Factors

The relationships between social structure and processes and process-related factors are interesting for two reasons. First, the presence of statistically significant relationships can indicate specific mechanisms through which social structure affects performance. Second, those measures of social structure that do not affect performance directly may still influence processes and process-related factors, and in this way, affect performance indirectly.

Mediation of the cultural distance – performance relationship. Results of our analysis showed that processes and process-related factors can mediate the effect of cultural distance on performance. As it has been discussed above, the three cultural distance measures that have been used in empirical research differ in their ability to capture the incongruence in culturally determined behavioral norms.

Differences in behavioral norms reflected in perceptions of cultural distance tend to influence performance largely negatively in all domains. This negative effect can be transmitted by processes as well as by process-related factors that have been included in our analysis, i.e. by reduced commitment, transparency, and trust, and increased disagreements. Interestingly, all relationships but two in this mediation model are heterogeneous, with zero in the credibility interval. That is, we cannot rule out the possibility that in some contexts the effect of a perceptual measure of cultural distance on performance may become positive, although not very high in magnitude. This relatively low positive effect can be transmitted via commitment and transparency, but not via reduced conflicts or increased trust. Independently of context, these last two mediators remain adversely affected by differences in partners' behavioral norms and practices. Thus, for practitioners, this means that it is important to take steps to reduce the perception of cultural differences by improving awareness of partner's national culture and the peculiarities of institutional orders composing it. Another possibility that should be explored in future research is whether splitting areas of influence between parents and decreasing the need for frequent interactions can remedy the problems caused by the incongruence in culturally determined behavioral norms.

Our results suggest that a Hofstede's-dimensions-based measure is only able to capture the indirect effect of cultural distance on performance through heightened disagreements.

Next, according to our results, in international alliances the negative effect of cultural distance on performance can be transmitted via reduced transparency. And this negative effect is generalizable across contexts. However, reduced transparency alone only weakly suggests the possibility of behavioral problems. Problems with transparency can be caused by geographical/physical distance, language difficulties, or insufficient personal interactions in addition to differences in behavioral routines. Trust does not mediate this relationship. As for commitment, currently it is not clear whether it can mediate this effect or not. Thus, more studies to test whether international alliances provide relatively higher value and whether managers value these alliances more, are necessary. Taking into consideration that the effect of a binary measure of cultural distance on disagreements has not been studied, more studies of the effect of binary cultural distance on processes as well as on performance itself should be conducted in future.

Mediation of the mutual experience – performance relationship. Results of our analysis show that processes and process-related factors can mediate the effect of mutual experience on performance. Our results suggest that mutual experience affects performance through higher commitment, learning, and trust. Interestingly, according to currently available evidence, transparency does not

play any role in mediating this effect. However, this result should be interpreted with caution until more empirical evidence is produced. Thus, prior experience of working together helps partners to meet the expectations of each other, to adjust to each other's needs, as well as facilitate learning and encourage trust.

It is interesting to observe that continuous measures of mutual experience are better predictors of learning and trust than binary measures, while for commitment the way mutual experience was measured is not important. This suggests that changes in the mental and emotional states of interacting individuals leading to learning and trust development require time to happen and depend on the frequency and the duration of prior interactions. Unfortunately, we have not been able to test whether the length of mutual experience moderates the strength of its effect on trust and learning, because continuous measures of mutual experience have been operationalized in a variety of ways precluding comparison between them. It is important to address this question in future research because some researchers have argued that excessive reliance on informal understandings and trust can create conditions for their misuse. It may turn out that such misuse happens when partners start to rely on trust too early in the alliance life course before it has become institutionalized.

4.6.6. Limitations

(1) Due to the limited number of empirical studies, estimated true population correlations for some relationships remain heterogeneous. As a result, we cannot establish empirical generalizations for them. Therefore, there is a need for constructive replication studies focusing on such relationships.

(2) A number of relationships included in our model have not been tested empirically in the alliance field. As a result, it was not possible to compose the complete correlation matrix necessary for performing a regression analysis to further explore the feasibility of the proposed conceptual framework. For example, further investigation is necessary for the relationships of various measures of cultural distance and mutual experience with performance; of mutual experience with disagreements; of disagreements with some measures of performance; of disagreements with trust; of social structure, process and process-related factors with operational measure of performance.

(3) We realized that research measures may reflect several constructs (measures of cultural distance) as well as combine into one measure, items that represent different constructs (commitment and trust). Future studies should pay more attention to the validity of the measures used.

(4) Our ability to perform moderator analysis has been compromised by several problems. One problem was that the research often measured constructs in the unique way (e.g., a continuous measure of mutual experience), which results in different units of measurement. While undoubtedly they do this for good reason, it rules out the possibility of performing meta-analysis to test moderation effects. This is very unfortunate because this is one of the unique strengths of the meta-analytical method which primary studies cannot replicate. Thus, it is recommendable that researchers use both unique and standard measures. Additionally, the lack of complete descriptions of samples makes it difficult to conduct moderator analysis by sample characteristics.

CHAPTER 5. EXPERIENCE, LEARNING, AND PERFORMANCE: A META-ANALYTIC EXPLORATION

Alliances can provide partners with a competitive advantage (Ireland, Hitt and Vaidyanath, 2002) by enabling their adaptation to a changing competitive landscape (Harrigan, 1987; Glaister and Buckley, 1996). Despite the benefits that alliances may give, their failure rate is high (Park and Ungson, 2001; Das and Teng, 2000). Therefore, it is important to understand how the ability to manage them successfully can be built.

A firm's ability to collaborate via strategic alliances is considered as a subset of dynamic capability (Teece, Pisano and Shuen, 1997; Eisenhardt and Martin, 2000). Dynamic capability was defined differently in the literature. Some researchers view it as extremely sophisticated and elaborated knowledge, and others as simple heuristics (Eisenhardt and Martin, 2000). They can also exist either in explicit or tacit form (Zollo and Winter in Easterby-Smith and Lyles, 2003). In either case, prior experience is the necessary block for building such capabilities.

Through prior alliance-related experience partners accumulate knowledge of different kinds, e.g., about tasks, about how to structure an alliance, about process management, about a partner (Inkpen, 1996). Knowledge accumulated in a specific domain is likely to influence certain characteristics of the collaborative process and not others. Or, plausibly, different types of alliance-related experience facilitate different alliance processes to different extents. The distinctions between general and mutual experience has not received a lot of attention (Gulati, Lavie and Singh, 2009).

Additionally, although initially there was general agreement on the beneficial effect of experience, some empirical evidence to the contrary exists (Gulati, Lavie and Singh, 2009). Experience provides opportunity for knowledge accumulation, which is a necessary condition for building routines as well as dynamic capabilities (Zollo and Winter in Easterby-Smith and Lyles, 2003). Repeated “[p]ractice helps people to understand process more fully and so develop more effective routines” (Eisenhardt and Martin, 2000: 1114). However, some empirical studies found a negative effect of experience. Such a negative effect was explained in several ways. First, a firm made wrong conclusions about the causes of its past performance, i.e. superstitious learning (Schulz in Baum, 2002). Second, the conclusions correctly made for some context were reapplied in different contexts where they do not hold, i.e. transfer effect (Finkelstein and Halebian, 2002).

Our objective is (1) to find out whether it is possible to establish empirical generalization of the effects of alliance-related experiences on learning and performance, (2) to explore the possible presence of moderating variables, and (3) to check the feasibility of the mediation of the relationships of interest by processes. The types of experience analysed in this study are: general alliance experience, mutual alliance experience, and mutual experience in contexts different from alliances. General alliance experience is experience gained in any alliance with any partner. Mutual experience is accumulated by repeated collaboration with the same partner via alliances or in other business relationships. These types of experiences are those that have been used in the empirical literature in the alliance field. We suggest that different types of alliance-related experiences have a direct effect on alliance performance and learning, and its effect on learning is mediated by process factors.

5.1. KNOWLEDGE, LEARNING AND PERFORMANCE IN STRATEGIC ALLIANCES

Theoretical studies suggest and empirical studies confirm that in strategic alliances learning about a task is intertwined with partners' learning about each other and about efficient process governance (Doz, 1996; Ariño and de la Torre, 1998). The efficiency of collaborative process governance is based on partners' ability to generate shared goals out of individual ones (Zajac and Olsen, 1993), develop realistic formal and psychological contracts (Ring, 1997), define an alliance scope by increasing common benefits and reducing the potential for private ones (Khanna, 1998), etc. This knowledge motivates partners to adhere to non-competitive strategy (Lubatkin, Florin and Lane, 2001) and therefore helps to generate relational rents (Dyer and Singh, 1998) and enhances alliance performance.

According to Lubatkin, Florin and Lane (2001), in order to develop such knowledge of shared goals for an alliance, an understanding of each other's roles, areas of both specialization and mutual dependency, partners should develop an understanding of the elements of each other's knowledge structure: know-about, -how, -what, -where, and -why. These categories include a broad scope of knowledge, varying from the most general and explicit to highly tacit. It is worth explaining these elements. The knowledge of basic concepts and facts (i.e. know-what) and how they are connected (i.e. know-how) is explicit knowledge and therefore partners can acquire it independently. This knowledge enables communication between partners. How numerous knowledge domains (i.e. know-about) of a partner are linked to one other to form a partner's expert knowledge and strategy (i.e. know-why) is less obvious and cannot be easily observed from the

outside. Understanding of each other's know-whys helps partners define the alliance shared project in such a way that it does not damage each partner's individual interests and therefore prevents partners from undertaking unilateral uncooperative adjustments. Know-whys (or the way know-what, -how and -about are linked together) of organizations and the individuals within them differ. Know-whys of different actors can be linked together in a variety of ways. These linkages are subject to political and social forces that infuse organizations, markets, and societies (Strang and Sine in Baum, 2002). Knowledge about how knowledge is socially embedded is know-where. Among other things it includes general principles and values behind partners' actions.

Thus, since most of this knowledge is not explicit and cannot be acquired outside the focal interorganizational relationship, alliance post-formative process is a playing field where partners can interact together to generate the shared knowledge necessary for their collaborative project from knowledge they held individually.

5.2. EXPERIENCE AND LEARNING

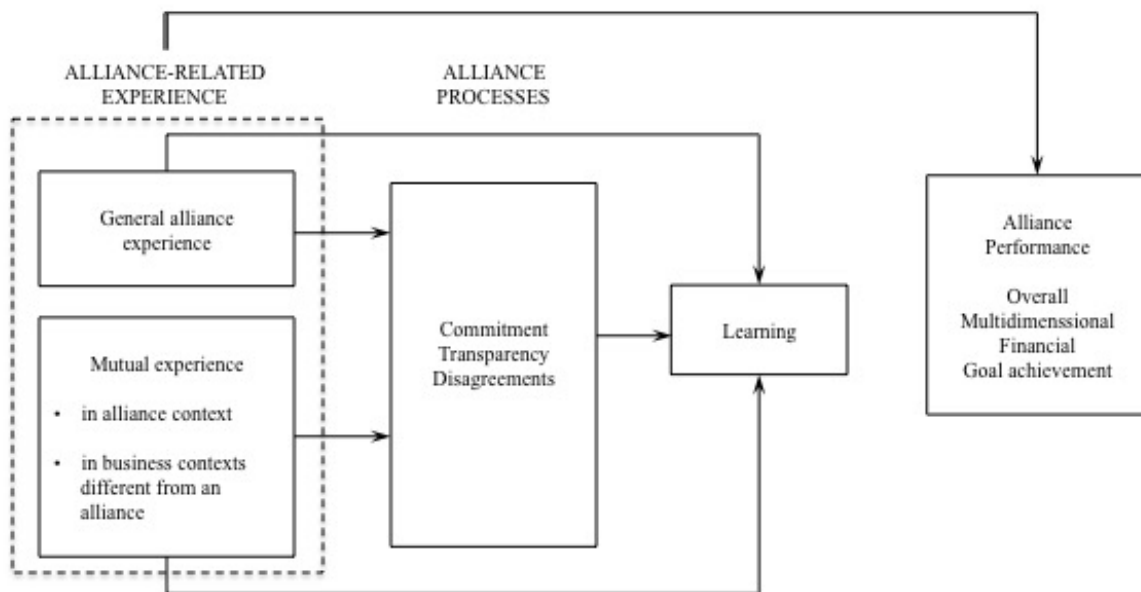
According to behavioral and social learning perspectives, organizations and people in organizations can learn as a result of observing the positive and negative consequences of their own behavior or the behavior of others, i.e. as a result of experience. They only retain those behaviors that are supported by positive performance feedback and disregard other behaviors. This process may involve both individual and collective sensemaking and interpretations. Furthermore, according to evolutionary perspective inferences, past experience may become encoded in behavior-guiding routines (Nelson and Winter, 1992). Such routines may eventually become dynamic capabilities (Zollo and Winter in Easterby-Smith and Lyles, 2003). Keeping all other factors unchanged, the longer the duration of performing a task (by a partner's firm individually or by all partners in an alliance), the higher the accumulated stock of knowledge is about how to perform it in the best way possible. Here, the duration may refer either to the extent of prior experience of being engaged with similar tasks or same partners, or to the length of concurrent experience of being engaged in the focal alliance.

Two types of prior experience are relevant to this study. Namely, general and partner specific ones. General experience is gained across various alliances with different partners. Such variability of contexts provides the opportunity to test learned lessons, thereby improving understanding and accuracy and avoiding superstitious learning or transfer effect. General experience may lead to better partner selection decisions (Gulati, 1995; Kogut, 1989), reduce governance costs (Gulati and Singh, 1998; Williamson, 1979), and improve resolution of conflicts (Kale, Dyer and Singh, 2001).

General experience provides an opportunity to learn about diverse structural aspects of the collaborative process, but not about a partner's understanding of these aspects, nor about a partner himself – e.g., their trustworthiness, skills, etc. Thus, mutual experience is relatively more tailored to the dyad in question and can be transferred to different alliances between the same partners with a higher probability of success. Prior mutual experience provides opportunities for partners to create and confirm expectations, thus enabling the emergence of trust, develop and rely on psychological contracts, and cultivate personal relationships providing additional basis for conflict resolution (Ring and Van de Ven, 1994).

Thus, we propose to analyze the relationships between alliance-related experience, processes, learning, and performance as shown in Figure 5-1.

Figure 5-1. Relationships Between Alliance-Related Experience, Processes, Learning, and Performance



5.3. HYPOTHESES

5.3.1. Experience and Performance

General alliance experience and performance

General alliance experience improves partners' ability to recognize valuable opportunities for forming an alliance. It can also be a source of collaborative know-how, which helps partner to

avoid costly mistakes while structuring and managing an alliance. Therefore, we test the following relationship:

Hypothesis 1: General alliance experience has a significant positive relationship with alliance performance.

Mutual experience provides opportunities for partners to learn about each other's competences and how they are embedded in organizational processes and routines. They also provide opportunities to develop understandings and personal relationships that will reduce the need for future negotiations and effort needed for writing a contract (Dekker and Van den Abbeele, 2010). Thus, prior mutual experience leads to the development of unique knowledge about a focal partner company that can help generate relation-specific quasi rents. Therefore, we test the following hypothesis (the hypothesis about the effect of mutual experience on performance has been tested in Chapter 4; here we only compare performance with the effect from general experience):

Hypothesis 2: Prior mutual experience has a stronger influence on alliance performance than general alliance experience.

Moderation by performance measures

There are various measures of alliance performance used in the literature. Despite there being a small number of studies comparing them, no research has been done yet on when one or the other measure is appropriate (Ariño, 2003). In order to contribute new empirical evidence to this research area, we test whether performance measures moderate relationships of general experience with performance.

Moderation by mutual experience measures

Partners can gain mutual experience across various business settings, e.g. licensing, buyer-supplier relationships, etc. It is natural to think that mutual experience in alliance settings is more conducive for developing knowledge and rules that can be useful in the future alliances with the same partner, than mutual experience in other settings. Thus, we test following hypothesis:

Hypothesis 3: Prior mutual experience in alliance settings has a stronger influence on performance than prior mutual experience across various business settings.

5.3.2. Experience and Learning

General alliance experience and learning

There are various knowledge domains that partners should develop in order to achieve their goals for an alliance. Learning to manage an alliance, or alliance capability, is one of them. Learning depends on partners' ability to direct and control their everyday interactions. Through being engaged in various alliances, partners can test which routines are more effective. Therefore, we test the following hypothesis:

Hypothesis 4: General alliance experience is positively and significantly related to alliance learning.

Following Hypothesis 3, it is also interesting to test what type of experience makes its effect on learning stronger. From one hand, being exposed to different alliances allows partners to test and refine their alliance management capability and also allows for avoiding a transfer effect when knowledge is applied in the wrong context. On the other hand, if diversity is too high it can be difficult to learn. Additionally, general experience does not allow learning about the partner. Through mutual experience partners learn how to work with one another more effectively through common norms, language, develop understanding (Mayer and Argyres, 2004), and similar underlying assumptions and experiences (Zaheer et al., 1998). Thus, we test the following hypothesis:

Hypothesis 5: Mutual experience has stronger influence on learning than general alliance experience.

5.3.3. Mediating Role of Alliance Processes in the Relationship Between Experience and Learning

Mutual experience is a source of norms that parties can rely on until new norms specific to the focal collaboration are developed (Ring and Van de Ven, 1994). When partners are familiar with one another, participating managers have "accumulated meaningful knowledge about, or established affective bonds with, one another" (Bigley and Pearce, 1998: 412). It helps mutual accommodation and therefore helps parties to meet their asymmetric goals (Schelling, 1960). Personal attachment resulting from mutual experience binds partners together and motivates them to continue a relationship despite the emergence of problems and alternative opportunities. Mutual

experience can also contribute to the development of trust among participating managers (e.g., Kwon, 2008) and therefore enhance communication and transparency. Although general alliance experience cannot result in partner specific knowledge, it allows a firm to gauge the importance of paying conscious attention to management of the interaction process and the quality of relationships. Therefore, we test the following hypotheses:

Hypothesis 6: Alliance processes - a) commitment, b) transparency, and c) disagreements – mediate the relationship between mutual experience and learning.

Hypothesis 7: Alliance processes - a) commitment, b) transparency, and c) disagreements - mediate the relationship between general alliance experience and learning.

5.4. SAMPLE, DATA AND METHOD

We have conducted meta-analyses of quantitative correlational studies on strategic alliances containing variables of our interest. The process of collection of published empirical studies on the topic of our interest is described in Chapter 2. It resulted in 67 usable studies with a total sample size of 11,787 alliances; the number of alliances per relationship analyzed is between 187 and 4,968. From collected studies we have extracted correlations describing relationships between mutual experience, general experience, learning, performance, commitment, transparency, and disagreements. The description of extracted variables is provided in Table 2-1 of Chapter 2. The type of moderator analysis we performed is a subgroup analysis using a Z-test to compare means. Results are reported in Table 5-2 and Table 5-3.

5.5. RESULTS

Table 5-1 contains the results of the meta-analyses. The first two columns show the relationship analyzed. The next two columns provide the number of studies that were analyzed and the total sample size. The estimate of true population correlation – estimated by corrected weighted average correlation – is shown next. Then we report a 95% confidence interval, which is used to judge whether the correlation is different from zero. The last three columns report the statistics used to judge the presence of the moderating variables. The columns represent the 80% credibility interval, the percent of variance accounted for by artifacts, and the value of test statistics for a chi-square test of heterogeneity. Table 5-2 provides the results of moderator analysis. Table 5-3 provides a summary of results.

For the convenience of presentation, Tables 5-1 and 5-3 contain several relationships that have been tested in other chapters but are also used in this chapter since they form part of the “composite” hypotheses (i.e. about the mediation or the relative magnitude).

5.5.1. Experience and Performance

Results of testing Hypothesis 1 and 2 are provided in Tables 5-1 and 5-2.

As expected, general alliance experience is significantly and positively related with alliance performance ($\bar{r}_c = 0.08$, 95% CI is 0.04 to 0.11). The percent of artifacts variance (72%) is slightly lower than the required threshold, and the Q statistic of the chi-square test of heterogeneity is significantly less than the 10% level. Thus, this relationship cannot be considered homogenous; however, since its credibility interval does not include 0, only the magnitude but not the sign depends on the context.

The mutual experience – performance relationship was tested in chapter 4. As reported in section 4.5.2, although prior mutual experience between alliance partners is significantly and positively related with alliance performance ($\bar{r}_c = 0.13$, 95% CI is 0.07 to 0.18), its credibility interval contains zero (80% CR is -0.02 to 0.27) and therefore its sign depends on context. Since both relationships are heterogeneous, before proceeding with testing Hypothesis 2, we will test whether some heterogeneity can be accounted for by performance measures.

Moderation by performance measures

We analyzed moderation through the following measures of performance: overall, multidimensional, economic, and goal achievement (See Table 5-2). Results of moderator analysis for the mutual experience – performance relationship are reported in section 4.5. For the convenience of presentation, table 5-2 reports these results as well. As reported in section 4.5 mutual experience is significantly stronger correlated with a financial measure of performance than with overall and multidimensional measures. Its effect on goal achievement measure is heterogeneous with 0 in credibility interval. As for general experience, it is positively and significantly related to all measures of performance, including goal achievement measure (See Table 5-2). However, unlike the case with mutual experience, general experience affects financial measure of performance significantly weaker than the overall and multidimensional measure. Also, the sign of its relationship with goal achievement measure does not change with context.

Table 5-1. Meta-Analytic Results for Mutual Experience

Relationship		k	N	Mean r	Var. ρ	95% CI		80% CR		Expl. var., %	Q (p)
Mutual experience	Performance	23	3147	0.13	0.013	0.07	0.18	-0.02	0.27	40	57.82 (0.00)
	Overall	5	545	0.17	0.012	0.04	0.31	0.03	0.32	45	11.25 (0.02)
	Multidm.	12	1800	0.16	0.006	0.10	0.23	0.06	0.26	57	21.19 (0.03)
	Financial	2	304	0.34	0	0.02	0.67	NA		100	0.07 (0.79)
	Goals	5	609	-0.03	0.009	-0.14	0.09	-0.15	0.10	48	10.48 (0.03)
General experience	Performance	21	4968	0.08	0.002	0.04	0.11	0.01	0.14	72	29.12 (0.09)
	Overall	5	532	0.14	0	0.13	0.15	NA		100	3.01 (0.56)
	Multidm.	7	989	0.15	0	0.15	0.16	NA		100	4.95 (0.54)
	Financial	5	3141	0.03	0	0.028	0.034	-0.03	0.09	45	11.09 (0.03)
	Goals	5	447	0.12	0	0.05	0.19	NA		100	2.43 (0.66)
Mutual experience	Learning	5	666	0.12	0	0.05	0.18	NA		100	3.35 (0.50)
General experience		8	1196	0.23	0.01	0.13	0.33	0.08	0.38	35	21.57 (0.00)
Mutual experience	Commitment	12	2245	0.13	0.004	0.07	0.18	0.04	0.21	62	19.42 (0.05)
	Transparency	10	1008	0.05	0	-0.01	0.12	NA		100	9.7 (0.38)
	Disagreements	-	-	-	-	-		-		-	
Commitment	Learning	7	737	0.58	0.012	0.48	0.69	0.44	0.72	38	18.43 (0.01)
Transparency		6	941	0.34	0.031	0.19	0.50	0.12	0.57	18	32.04 (0.00)
Disagreements		4	558	-0.11	0.006	-0.28	0.05	-0.29	0.06	66	11.94 (0.01)
General experience	Commitment	3	419	0.16	0.001	0.04	0.27	0.12	0.20	90	3.38 (0.18)
	Transparency	5	577	0.14	0.007	0.02	0.25	0.03	0.25	59	8.70 (0.07)
	Disagreements	2	187	0.15	0	0.07	0.23	NA		100	0.59 (0.44)

Note: k – number of samples; N – total sample size; Mean r – sample-size-weighted mean corrected correlation; Var. ρ – estimated variance of population correlation; CI – confidence interval; CR – credibility interval; Q – Chi-square test for heterogeneity of effect sizes.

Table 5-2. Results of Moderator Analysis

Relationship		Mean r	k	N	Var e	(1)	(2)	(3)	(4)
<i>Moderations by performance measure</i>									
Mutual experience	Performance								
	(1) Overall	0.17	5	545	0.009	0	0.21	-2.44*	3.40*
	(2) Multidimensional	0.16	12	1800	0.006		0	-3.00*	4.03*
	(3) Financial	0.34	2	304	0.006			0	5.37*
	(4) Goals	-0.03	5	609	0.008				0
General experience	Performance								
	(1) Overall	0.14	5	532	0.009	0	-0.19	2.37*	0.31
	(2) Multidimensional	0.15	7	989	0.007		0	3.32*	0.53
	(3) Financial	0.03	5	3141	0.002				-1.79*
	(4) Goals	0.12	5	447	0.011				0
<i>Moderations by the type of experience: partner-specific versus general</i>									
Experience	Performance								
		(1) Mutual	0.13	23	3147	0.007	0	28.25*	-
	(2) General	0.08	21	4968	0.004		0	-	-
Experience	Overall measure of performance								
		(1) Mutual	0.17	5	545	0.009	0	5.16*	-
	(2) General	0.14	5	532	0.009		0	-	-
Experience	Multidimensional measure of performance								
		(1) Mutual	0.16	12	1800	0.006	0	3.11*	-
	(2) General	0.15	7	989	0.007		0	-	-

Table 5-2 continued

Relationship		Mean r	k	N	Var e	(1)	(2)	(3)	(4)
<i>Moderations by the type of experience: partner-specific versus general</i>									
Experience	Financial measure of performance								
(1) Mutual		0.34	2	304	0.006	0	68.90*	-	-
(2) General		0.03	5	3141	0.002		0	-	-
Experience	Goal achievement measure of performance								
(1) Mutual		-0.03	5	609	0.008	0	-24.34*	-	-
(2) General		0.12	5	447	0.011		0	-	-
Experience	Learning								
(1) Mutual		0.12	5	666	0.007	0	-27.25*	-	-
(2) General		0.23	8	1196	0.006		0	-	-
<i>Moderations by the type of experience</i>									
Mutual experience	Overall and multidimensional measures combined								
(1) In SA contexts		0.14	12	1617	0.007	0	-13.78*	-	-
(2) Across various contexts		0.20	5	728	0.007		0	-	-
Mutual experience in SA context	Performance								
(1) binary		0.07	8	1281	0.006	0	4.90*	-	-
(2) continuous		0.05	7	784	0.009		0	-	-

Note: k – number of samples; N – total sample size; Mean r - sample-size-weighted mean corrected correlation; Var. e – estimated variance of sampling error; columns (1) to (4) report values of Z statistics; * - $p < 0.05$

Table 5-3. Summary of Hypothesized Relationships and Results

H	Relationship	Hypothesized effect	Results	Support
<i>Different types of experience with Performance</i>				
^a ch4	ME → Performance	+	0.13* CR(-0.02; 0.27)	Partial
1	GE → Performance	+	0.08	Yes
2	ME → Performance > GE → Performance		Z=28.25*	Yes
3	ME _{SA} → P > ME _{VAR} → P		Z=-13.78*	No
<i>Different types of experience with Learning</i>				
^a ch4	ME → L	+	0.12*	Yes
4	GE → L	+	0.23*	Yes
5	ME → L > GE → L		Z=-27.25*	No
6 ^b	ME → Processes → L	Mediation by Commitment Transparency Disagreements		Yes No -
ch4	ME → Processes			
	Commitment	+	0.13*	Yes
	Transparency	+	0.05	No
	Disagreements	-	-	-
ch3	Processes → L			
	Commitment	+	0.58*	Yes
	Transparency	+	0.34*	Yes
	Disagreements	-	-0.11 CR (-0.29; 0.06)	Partial
7	GE → Processes → L	Mediation by Commitment Transparency Disagreements		Yes Yes -
	GE → Commitment	+	0.15*	Yes
	GE → Transparency	+	0.14*	Yes
	GE → Disagreements	To explore	0.15*	

Note: * - $p < 0.05$; ME – mutual experience; GE – general experience; CR – 80% credibility interval, it has been shown only if it contains 0; ^a – a hypothesis was tested in other chapter, here it is provided only for convenience; ^b – three relationships constituting this hypothesis were tested in different chapters, here we only pull them together.

some heterogeneity in the relationships of mutual and general experience with performance can be attributed to performance measures, it is meaningful to compare the strength of the effect of mutual and general experience on each measure of performance individually. As expected, mutual experience more strongly influences overall, multidimensional, and financial measures of performance. Results of Z-tests of differences show there are statistically significant differences between groups ($Z=5.16$, $p=0.00$; $Z=3.11$, $p=0.00$; $Z=68.90$, $p=0.00$). Considering the extent of heterogeneity of the effect of mutual experience on goal achievement, we can say that whether it affects goal achievement more so or less so than general experience will depend on context. Thus, Hypothesis 2 is supported for overall, multidimensional and financial measures of performance.

Moderation by mutual experience measures

Taking into account that the magnitude of the effect of mutual experience on different performance measures varies significantly, the relative importance of mutual experience acquired in different contexts should be tested for each measure of performance individually. We could not test Hypothesis 3 for financial measures of performance due to the lack of data. As for overall and multidimensional measures of performance, these two measures are identical conceptually and are not different statistically (see results of Z test in Table 5-2), therefore we tested Hypothesis 3 for these measures jointly. Contrary to our expectations, the experience of being previously involved in strategic alliances together has a lower impact on overall and multidimensional measures of performance combined ($\bar{r}_c = 0.14$, 95% CI is 0.07 to 0.22) than mutual experience gained across various business contexts ($\bar{r}_c = 0.20$, 95% CI is 0.13 to 0.26) on performance ($Z=-13.78$, $p=0.00$). Thus, hypothesis 3 is rejected for overall and multidimensional measures combined.

5.5.2. Experience and Learning

Results of testing Hypotheses 4 and 5 are shown in Table 5-2. The mutual experience – learning relationship has been tested in chapter 4. As it has been reported in section 4.5.2, prior mutual experience between alliance partners is significantly and positively related with alliance learning ($\bar{r}_c = 0.12$, 95% CI is 0.05 to 0.18), and it is homogenous according to all three tests of heterogeneity and therefore is constant across contexts. As expected, general alliance experience is positively and significantly related with alliance learning ($\bar{r}_c = 0.23$, 95% is CI 0.13 to 0.33 and 80% CR is 0.08 to 0.38). This relationship is heterogeneous based on the percentage of variance accounted for (35%) and chi-square test of heterogeneity ($Q=21.57$, $p=0.00$), but its credibility

interval does not contain zero and therefore only its magnitude varies across contexts. Thus, hypothesis 4 is supported.

Contrary to our expectations, the effect of prior mutual experience on learning is significantly weaker than the effect of general alliance experience ($Z=-27.25$, $p=0.00$) (See Table 5-2). Thus, hypothesis 5 is rejected.

5.5.3. The Mediating Role of Processes in Experience – Learning Relationship

We analyzed the possibility for mediating effect by three alliance processes: commitment, transparency, and disagreements. The necessary condition for such effect is that all relationships between antecedent, mediator, and the effect are significant. The relationships of mutual experience with commitment, transparency and disagreements as well as with learning have been tested in chapter 4; while the relationships of commitment, transparency and disagreements with learning have been tested in chapter 3. Here we consider the results from chapters 3 and 4 together to establish which processes can potentially mediate the effect of mutual experience on learning. Mutual experience significantly and positively affects commitment, which in turn significantly and positively influences learning. The relationship between mutual experience and learning is positive and significant. Thus, the necessary condition is fulfilled, and therefore commitment can potentially mediate the effect of mutual experience on learning. Mutual experience does not significantly affect transparency. Therefore, transparency cannot mediate the effect of mutual experience on learning. There is not enough data to analyze disagreements. So, hypothesis 6 is supported by commitment only.

We have established the positive and significant effect of general alliance experience on learning (Hypothesis 4). Our results in this chapter show that, as expected, general experience positively and significantly affects commitment and transparency ($\bar{r}_c = 0.16$, 95% CI is 0.04 to 0.27 and $\bar{r}_c = 0.14$, 95% CI is 0.02 to 0.25 respectively). The first relationship is homogenous, while the second one is heterogeneous but without zero in the credibility interval. Thus, both commitment and transparency potentially can mediate the general alliance experience – learning relationship. Unexpectedly, general experience positively and significantly affects disagreements ($\bar{r}_c = 0.15$, 95% CI is 0.07 to 0.23), and this relationship is homogenous according to all three criteria. However, this result should be taken with caution because the number of studies and total sample size is low ($k=2$). The effect of disagreement on learning is contextually dependent. Thus, mediation is possible only in some contexts.

Therefore, commitment and transparency support Hypothesis 7, while disagreements may support this hypothesis only in some contexts. Further search for moderating variables is indicated.

5.6. DISCUSSION

Our study makes several contributions. *First*, by conducting meta-analysis we *reconcile conflicting empirical findings* related to the effect of experience on alliance performance and learning. *Second*, by conducting *moderator analysis* by performance measure we suggest which measures are likely to account for heterogeneity and therefore account for conflicting findings. By comparing different types of experience (i.e. alliance, partner-related, and the combination of both) and relating them to processes and learning, we are able understand better the mechanisms by which they affect an alliance. *Third*, we suggest *directions for further research*, by indicating the relationships that have not received attention and by making suggestions for research practices.

Our results suggest that all types of alliance-related experience – general experience with alliances, experience of working together with a focal partner in various business contexts different from an alliance, and experience of working together in alliance context – matter both for alliance performance and learning, although to different extents. Our results show that, in general, prior mutual experience is somewhat more strongly related to performance, while general alliance experience is more strongly related to learning.

When measures of performance are taken into account, it is interesting to see that general and mutual types of experience are really different with respect to goal achievement measure of performance. Specifically, mutual experience can affect goal achievement in either direction, while the effect of general experience is strictly positive. When different types of mutual experience are taken into consideration, our results show that mutual experience has the highest impact on performance when it is gained across various business settings.

According to currently existing empirical evidence, the effect of mutual experience on learning (as well as on performance) can be transmitted by commitment, but not by transparency, while the effect of general experience can potentially be mediated by any of the processes analyzed in this study. The first finding can be suggestive of the fact that as the result of working together over a long period of time, partners become attached to the relationship and come to understand each other well, so they adjust willingly. In the absence of such knowledge about one another, partners need to engage in more extensive interactions in an ongoing alliance in order to develop the necessary knowledge about each other.

Some findings were not expected. The most surprising being the positive association between general experience and disagreements. This result may be due to secondary sampling error, i.e. the fact that the effect size (correlations coefficient) found in the study can be randomly very different from true population correlation. Researchers should include this relationship in their work to generate additional empirical evidence. Another unexpected finding is that mutual experience can be negatively related to goal achievement and transparency. The result of moderator analysis has shown insignificant influence of prior mutual experience on the goal achievement measure of performance. One possible explanation for this is the effect of strong ties. From one side, strong ties – i.e. very intensive inter-firm interactions – promote reciprocity, transfer of private information, transaction-specific investments, and trust, but from another side strong ties reduce the range of opportunities that would be available to partners if they interacted with other firms in the market. Thus, strong ties may be conducive to the creation of relational rents and savings resulting from transaction-specific investments but may be detrimental for goal achievement in the long run if partners become strongly embedded in the relationships and begin to resist change.

Surprisingly, we have identified a lack of empirical studies focusing on the relationship of alliance-related experience with alliance processes related to the coordination of activities such as the extent of shared management and formalization.

5.7. CONCLUSION

Our meta-analytic exploration shows that prior experience is important for alliance learning and performance, and therefore firms should engage in various kinds of activities in order to gain a wide range of skills. Moreover, since alliance process mediates the relationship between experience and learning, some knowledge cannot result from prior experience but has to be developed *in situ*. Overall our results show that it is worth further scrutinizing the role that different types of alliance-related experience play in alliance learning and performance, and the respective mediating processes.

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Appendix A. Studies Included in Meta-Analyses

Authors	Source
Acquaah M.	2009 JIM
Adobor H.	2005 JBR
Ali T., Larimo, J.	2016 SJM
Barden J., Steensma H., Lyles M.	2005 JIBS
Baughn C. C., Neupert K.E., Anh P.T.T., Hang N.T.M.	2011 IJHRM
Beamish P., Kachra A.	2004 JWB
Becerra M., Lunnan R., Huemer L.	2008 JMSt
Bello D.C., Katsikeas C.S., Robson M.J._	2010 AMA
Benavides-Espinosa M.M., Ribeiro-Soriano D.	2014 JBR
Benavides-Espinosa M.M.	2012 K&PM
Bounchken R.B, Teichert T.A.	2013 IJI&TM
Bouncken R.B.	2012 BJM
Bstieler L, Hemmert M.	2010 APJM
Chang J., Bai X., Li J.J.	2015 JIM
Chen X., Chen A.X., Zhou K.Z.	2014 JIM
Child J., Yan Y.	2003 JMS
Chung C.C., Beamish P.W.	2012 JWB
Cost e Silva S., Bradley F., Sousa C.M.P.	2012 IBR
Cullen J., Johnson J., Sakano T.	1995 JIBS
Damanpour F., Devece C., Chen C.C, Pothukuchi V.	2012 APJM
Dhanaraj C., Lyles M., Steensma K., Tihanyi L.	2004 JIBS
Ding D.	1997 JIMA
Dong L., Glaister K.W.	2009 APBR
Fang E., Palmatier R., Scheer L., Li N.	2008 JM
Farrell M.A., Oczkowski E., Kharabshen R.	2011 IMM
Glaister K., Buckley P.	1999 MIR
Gong Y., Shenkar O., Luo Y., Nyaw M.-K.	2007 SMJ
Griffith D. A., Zeybek A. Y., O'Brien M.	2001 JM
Hoang H., Rothaermel F. T.	2005 AMJ
Hoetker G., Mellewigt T.	2009 SMJ
Hsieh L.H.Y., Rodriguez S.B.	2014 MIR
Huang M.-C., Chiu Y.P.	2014 APJM
Huang M.-C., Hsiung H.-H., Lu T.-C.	2015 APMR
Janowicz-Panjaitan, Noorderhaven	2008 RP
Jiang X., Jiang F., Cai X., Liu H.	2013 IMM
Jiang X., Li Y.	2009 RP
Johnson J., Cullen J., Sakano T., Bronson J.	2001 JBR
Jong G., Klein Woolthuis R. J. A.	2009 IMP&P
Judge W. Q., Dooley R.	2006 BJM
Kang I., Han S., Shin G.-C	2014 IBR
Kaufman J., O'Neil H. M., York A. S.	2006 MAJB
Kim j.	2013 I&CC
Kim J., Parkhe A.	2009 BJM
Klijn E., Reuer J.J., Van den Bosch F.A.J., Volberda H.W.	2013 JMS
Krishnan R., Martin X., Noorderhaven N. G.	2006 AMJ
Kwon Y.-C.	2008 IBR
Lane P., Salk J., Lyles M.	2001 SMJ
Lasserre P.	1999 APJM
Lavie D., Haunschild P. R., Khanna P.	2013 SMJ
Lee C.-W.	2007 JBR

Appendix A Continued (1)

Authors	Source
Lee R. P., Johnson J. L., Grewal R.	2008 IJRM
Lee R. P., Johnson J.L.	2010 DS
Leischnig A., Geigenmueller A., Lohmann S.	2014 JBR
Lew Y.-K., Sinkovics R.R., Kiuvalainen O.	2013 IBR
Li J., Hambrick D.C.	2005 AMJ
Lin X(Xiaohua), Germain R.	1998 JIBS
Lin X.(Xiaohua)	2005 MIR
Lin X., Malhotra S.	2012 IJIR
Lin Y.-H., PingHo S.	2013 JCI&M
Lioukas C. S., Reuer J.J	2015 AMJ
Lopez-Navarro M.A., Callarisa-Fiol L., Moliner-Tena M.A.	2014 JSBM
Lu L.-T.	2007 IJM
Lu J., Beamish P.	2006 JBV
Lu L.-T., Lee Y.-H.	2007
Lui S. S., Ngo H.	2005 GOM
Lui S. S., Ngo H.	2005 JMS
Lunnan R., Haugland S.A.	2008 SMJ
Luo Y.	1997 OSc
Luo Y.	2002 JM
Luo Y.	2002 SMJ
Luo Y., Park S.(Seung Ho)	2004 JIBS
Luo Y.	2006 HR
Luo Y.	2008 SMJ
Luo Y.	2008 SMJ
Luo Y.	2009 JIM
Luo Y.	2007 SMJ
Luo Y.	2007 JIBS
Luo Y., Park S.(Seung Ho)	2004 JIBS
Luo Y., Shenkar O.	2002 JIM
Lyles M., Salk J.	1996 JIBS
Lyles M., von Krogh G., Aadne J.	2003 MIR
Ma C., Yang Z., Yao Z., Fische G., Fang E.	2012 IMM
McCutchen Jr W. W., Swamidass P.M., Teng B.-S.	2008 JHTMR
Mjoen H., Tallman S.	1997 OSc
Mohr A.T., Puck J.	2013 MIR
Morris B. G. A., Cadogan J. W.	2001 JMM
Musarra G., Robson M.J., Katsiekeas S.	2016 IMM
Muthusamy S. K., White M.A., Carr A.	2007 JMI
Muthusamy S. K., White M. A.	2005 OSt
Muthusamy S. K., White M.A.	2006 JBR
Newburry W., Zeira Y.	1999 JMS
Nicolaou A.I., Sedatole K.L., Lankton N.K.	2011 CAR
Nielsen B. B.	2007 IBR
Nielsen B.B., Gudergan S.	2012 IBR
Nielsen, Nielsen	2008 JMSt
Norman P. M.	2002 JHTMR
Pak Y. S., Ra W., Park Y.-R.	2009 IBR
Park B., Giroud A., Mirza H., Whitelock J.	2008 AB&M
Park B. I., Giroud A., Glaister K. W.	2008 APBR
Park C., Vertinsky I., Becerra M.	2015 IBR
Park C., Vertinsky I.	JBR 2016
Parkhe A.	1993 OSc
Pearce R. J.	2001 JMSt
Perry M. L., Sengupta S., Krapfel R.	2004 JBR

Appendix A Continued (2)

Authors	Source
Pothukuchi V., Damanpour F., Choi J., Chen C C., Park S. H.	2002 JIBS
Rahma_Korn_LRP_2014	
Reuer J. J., Zollo M.	2005 RP
Rindfleisch	2000 ML
Rindfleisch, Moorman	2001
Robson M. J., Katsikeas C. S., Bello D.C.	2008 OSc
Sarkar MB, Echambadi R., Cavusgil S.T., Aulakh P. S.	2001 JAMS
Saxton T.	1997 AMJ
Schilke O., Cook K. S.	2015 SMJ
Schlleimer S.C., Shulman A.D	2011 JPIM
Schuenmakers, Duysters	2006
Schulze A., Brojerdi G. J. C.	2012 EMR
Schulze A., Brojerdi G., von Krogh G.	2014 JPIM
Schumacher G.	2006 SBR
Shakeri R., Radfar R.	2016 TFSC
Cui A.S., Shyam Kumar M.V.	2012 JBR
Sim A. B., Ali Y.	1998 JWB
Simonin B. L.	1997 AMJ
Simonin B. L.	1999 SMJ
Simonin B. L.	2004 JIBS
Thorgren S., Wincent J., Boter H.	2013 JE&TM
Tiwana A.	2008 SMJ
Toon M.A., Robson M.J., Morgan R.E.	2012IMM
Tsang E. W. K., Nguyen D. T., Erramilli M. K.	2004 JIM
Vaidya S.	2012 JCIM
Wang C.H.	2011 TF&SC
White S., Lui S. S.-Y.	2005 SMJ
Xu Jiang, Li	2008 JWB
Xue J., Yuan H., Shi B.	2016_JBR
Yan A., Gray B.	2001 JMSt
Yao Z., Yang Z., Fisher G.J., Ma C., Fang E.	2013 IBR
Young-Ybarra C., Wiersema M.	1999 OSc
Zhan W., Luo Y.	2008 MIR
Zhang Y., Li H., Hitt M. A., Cui G.	2007 JIBS
Zollo M., Reur J. J., Singh H.	2002 OSc