

Antecedents of Joint Venture Performance: A Meta-Analytical
Structural Equation Model

Abstract

Research on International Joint Ventures (IJVs) and their performance has found widespread interest both in the business and the academic world. However, the increasing number of scientific studies on the relationship between IJVs and performance has produced heterogeneous results. This study addresses this diversity and draws quantitative evidence from a meta-analytical structural equation model to examine antecedents (i.e., partner experience, trust, interdependence, commitment, information exchange, and cultural distance) of IJV performance. Most notably, trust and commitment emerged as most important antecedents of IJV performance whereas the other variables were related to IJV performance mediated by these core antecedents. As cultural distance does not appear to be strongly related to IJV performance, these findings challenge the idea that cultural distance between the partners has a negative effect on IJV performance.

Antecedents of Joint Venture Performance: A Meta-Analytical Structural Equation Model

Over the past decades, International Joint Ventures (IJVs) attracted widespread interest in the business as well as the academic world. As a result, a large number of empirical studies and miscellaneous special issues focused on inter-partner, parent, and environmental factors (e.g., *Academy of Management Journal* 1996, *Journal of International Business Studies* 1990, *Management International Review* 1990). However, lacking a common theory explaining IJV performance, research results have been fragmented and inconsistent. Consequently, researchers have repeatedly questioned the field for its lack of consolidation (Anderson 1990; Parkhe 1993a; Reus and Ritchie 2004). Addressing this deficit, the aim of our paper is to identify overall empirical relationships between proposed antecedents of joint venture performance with a meta-analytical structural equation model (MASEM). In our analyses, we integrated 50 Studies with a total number of $n = 8391$ firms.

To achieve our research aim, we proceed as follows: First, we identify variables which most frequently predicted IJV performance in existing studies. Second, we integrate existing findings on the antecedents of IJV performance in a meta-analytical structural equation model. The final section summarizes the results, points out limitations and provides implications for future research.

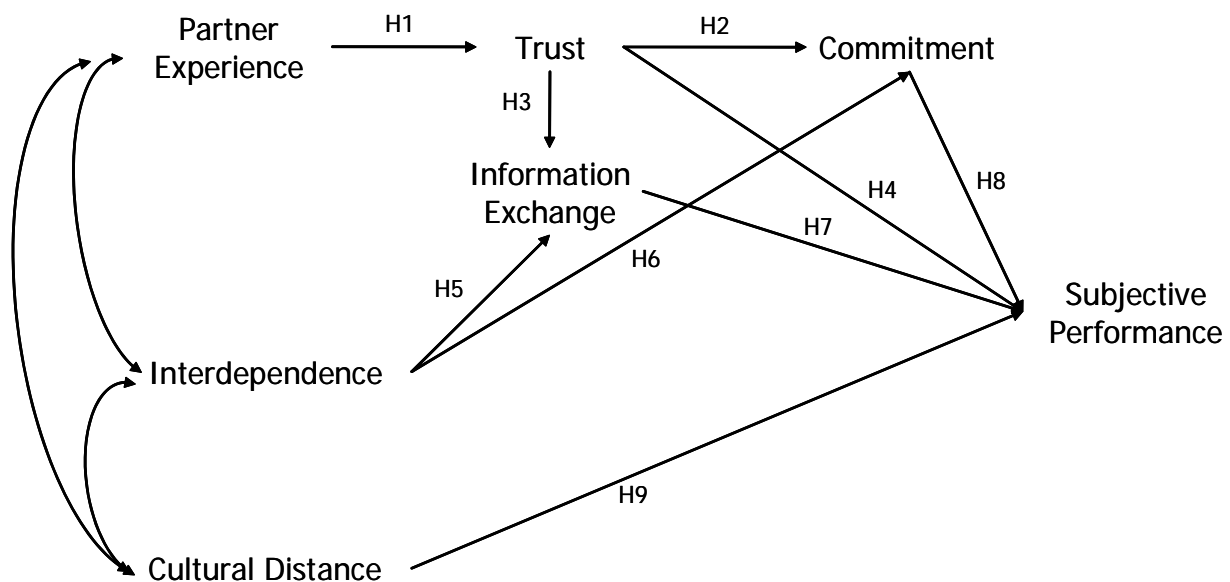
Antecedents of IJV Performance

An extensive body of previous IJV research focused on antecedents of IJV performance. Various theoretical underpinnings are applied to investigate IJVs and their performance resulting

in a bulk of determinants from interpartner, parent, and environmental levels. Robson et al. (2002) identify 75 determinants of IJV performance, which are analyzed in prior studies. These studies, however, failed to produce a consistent picture of antecedents of IJV performance. López-Navarro and Molina-Morales (2002: 115) comment that “[...] different subjective indicators used in the literature actually measure different phenomena and, consequently, are affected in a different way by variables used as determinants of the joint venture performance”.

Analyzing all 75 determinants would exceed the scope of this paper. Instead, we focus on those most frequently analyzed, ensuring a sufficient number of empirical studies for each variable. These are: partner experience, trust, interdependence, commitment, information exchange and cultural distance. Figure 1 depicts our theoretical model explained in the following section.

Fig. 1: Research model



The choice of the variables reflects major theories in IJV performance research, namely agency theory (Reuer and Miller 1997; Contractor and Kundu 1998; Kumar and Seth 1998), transaction cost economics (Hennart 1988; Kogut 1988; Ramanathan et al. 1997), and behavioral

perspectives (Inkpen and Birkenshaw 1994; Inkpen and Crossnan 1995; Lyles and Salk 1996).

The variables in our study are key variables in these theoretical approaches. Trust and experience are discussed in agency theory and transaction cost economics; experience interdependence, commitment, and information exchange are strongly related to the resource dependence theory. Thus, we implicitly consider the dominant theoretical underpinnings in the field. In the following, we discuss the impact of these antecedents on IJV performance.

Partner experience

Partner experience, that is, experience from prior collaborations fosters a climate of openness that is essential for developing trust. Partner experience provides initial understanding of the different corporate cultures and management styles as well as the partner firm's business strategy, organizational strength, and partner's behavior (Saxton 1997; Tallman & Shenkar 1994; Zollo et al. 2002). The partners' mutual understanding of their behavioral propensities is a major issue as the predictability of the partner's behavior is one of the biggest concerns of firms entering IJVs (Gulati 1995). Partner experience thus creates a basis for mutual trust and reduces the likelihood of opportunistic behavior (Gulati 1995; Parkhe 1993). Gulati (1995) distinguishes between deterrence-based and knowledge-based trust. Deterrence-based trust arises from repeat transactions because untrustworthy behavior by one of the partners can lead to costly sanctions that exceed any potential benefits from opportunistic behavior, such as loss of repeat business with the partner or other firms and loss of reputation. Repeat transactions also allow partners to develop knowledge-based trust, i.e., partners learn about each other and develop trust around norms of equity. The development of different forms of trust is an incremental process which

develops through repeated and continuous cooperation (Good 2000; Sjurts 1998). Based on these arguments we hypothesise that

H1: Partner experience is positively related to trust.

Trust

Building interpartner trust is of great importance, particularly when information asymmetries between IJV partners prevail. Transactions in IJVs are frequently accomplished under uncertain conditions, which may be conducive to opportunistic behavior among partners. The risk of opportunistic behavior in an untrustworthy partner and the potentially negative effect on a trusting partner underscores the importance of developing of a trusting relationship (Rousseau et al. 1998). The higher the potential of negative outcomes (i.e., financial losses), the greater the importance of interpartner trust, indicating that trust in equity based IJVs should be more important than in contractual IJVs. IJVs characterized by trust are so highly valued that partners will themselves to such IJVs. As a result, IJV partners are willing to share knowledge and allocate resources to the IJV. Johnson et al. (1996) stress the reciprocal effect of trust, meaning that trust manifests itself in behaviors encouraging the partner to trust in return. In contrast, mistrust breeds mistrust and as such would also serve to decrease commitment in the relationship (McDonald 1981). Further, Lane et al. (2001: 1141) explains that interpartner trust "[...] encourages the “teacher” firm to actively help the “student” firm to understand the knowledge it is offering”. Kale et al. (2000) findings support that mutual trust facilitates the exchange of information and knowledge between the partners.

Several studies confirm the importance of interpartner trust. Fey (1996), Norman (2004), Mohr and Spekman (1994), Sherwood et al. (2006), and Zaher et al. (1998) show that interpartner trust is vital to the successful performance of IJVs. Thus,

H 2: Trust is positively related to commitment.

H 3: Trust increases the exchange of information.

H 4: Trust is positively related to IJV performance.

Interdependence

According to resource dependence theory, firms lacking in essential resources will seek to establish IJVs with others in order to obtain needed resources. Resources can be classified as tangible, intangible and personnel-based. Tangible resources include financial and physical resources such as plant, equipment, and stocks of raw materials. Intangible resources include technology, know-how and reputation. Personnel-based resources include the skills, expertise and motivation of employees (Grant 1991).

Interdependence between partners necessitates maintenance of the relationship in order to achieve their common objectives (Frazier et al., 1989). Additionally, it increases the likelihood of opportunistic behavior (Hsieh and Rodriguez 2005; Provan and Skinner 1989; Smith and Barclay, 1999) and thereby creates an environment for the best possible performance since each partner is aware of its potential losses should the IJV be terminated. To obtain the needed resources, partners are willing to exchange information and allocate resources to the IJV. However, the existence of an asymmetrical interdependence has negative effects on the partnership (Miles et al. 1999). Furthermore, Kumar et al. (1995) show that asymmetrical

interdependence lowers commitment and increases the number of dysfunctional conflicts. From these arguments we derive the following hypotheses:

H 5: Interdependence is positively related to the exchange of information.

H 6: Interdependence is positively related to commitment.

Information exchange

Firms use IJVs for a variety of reasons, such as to gain access to new technologies and know-how, to enter new markets, or to excel competitive advantages (Contractor and Lorange 1988; Kale et al. 2000; Casson 1987). When learning is an explicit and primary goal, the exchange of knowledge is a key determinant of success (Hamel 1991). However, learning requires the exchange of information and knowledge via close interaction among the partner firms. Further, the sharing and exchange of information is pivotal to creating synergies of knowledge through collaborations (Nielsen 2005). This applies particularly to the transfer of tacit knowledge. As tacit knowledge is so hard to codify and transfer, the role of close collaboration and the exchange of information are essential in the process of creating new knowledge-related capabilities. Kale et al. (2006) reported that the exchange of relevant, timely and important information affects firms' performance. This offers considerable support for our next hypothesis

H 7: The exchange of Information is positively related to IJV performance.

Commitment

As Skarmeas et al. (2002: 759) state, commitment implies "[...] a rather diverse set of factors including desire, willingness, sacrifice behavior, expectation of continuity, belief, and importance of the relationship". Mutual commitment manifests itself in IJV specific investments

and allocation of financial, technical, and human resources. Mutual commitment reduces the likelihood of opportunistic behavior and, therefore, facilitates knowledge transfer whereas „a lack of commitment will often lead to ill-defined set of objectives and lack of overall direction for the organization” (Hu and Chen 1996: 166). Several studies provide empirical support for a positive relationship between commitment and IJV performance (Beamish and Banks, 1987; Holm et al., 1996; Brouthers et al., 2004; Cavusgil and Zou, 1994; Cullen et al., 1995; Hu and Chen, 1996; Newman, 1992; Perry et al., 2004; Phoocharoon et al., 2001).

H 8: Commitment is positively related to IJV performance.

Cultural Distance

Cultural distance describes the differences of cultural norms and values expressed by cultural distance. Hofstede (2001) defines culture as the collective programming of the mind which differentiates members of a group or category from members of other groups. The cultural distance between partners is one of most frequently researched variables in IJV research. Cultural distance is either measured by Hofstede's culture dimensions (i.e., power distance, individualism, masculinity, uncertainty avoidance, and long term orientation) or by an index developed by Kogut and Singh (1988). According to Gatignon and Anderson (1988: 311), cultural distance represents a „[...] particularly potent form of internal uncertainty.“ High cultural distance hinders communication and interaction between partners (Killing 1983; Pothukuchi et al. 2002). In contrast, a closer cultural distance facilitates creating shared views about values, norms, applied business practices, and management philosophies of the partners (Hu and Chen 1996). Additionally, closer cultural distance reduces potential misunderstandings and conflicts. Similarly, Perlmutter and Heenan (1986) claim that this conformity of cultural

values is a crucial factor for IJV performance. However, some studies also find a positive relationship between cultural distance and IJV performance (Park and Ungson 1997; Zeira et al. 1997). On the one hand, this positive relationship may stem from the fact that partners from different countries can learn more from each other and realize synergies due to their idiosyncratic strengths (Beamish and Kachra 2004). On the other hand, the relationship may be due to differences in organizational rather than country-related cultures (Pothukuchi et al. 2002).

H9: Cultural Distance is negative related to IJV performance.

METHOD

Sample

Our final sample included K = 48 studies with N = 8391 firms. We conducted an intensive literature research through ProQuest, Wiley InterScience, and JSTOR with various keywords (keywords searched include *joint venture, alliance, interpartner, interfirm, cooperation, performance, and success*) in order to identify available empirical studies and at the same time to avoid a systematical bias of our literature search. We also conducted issue-by-issue searches of the Management International Review, Journal of Management Studies, Journal of Business Research, International Business Review, Academy of Management Journal, Strategic Management Journal, and Journal of International Business Studies. Further, we systematically screened references of existing reviews and corresponding studies and reviewed conference proceedings from the Academy of Management (1998-2007), the Academy of International Business (1998-2007), the European International Business Academy (1998-2007) and others. Emulating Hunter and Schmidt (1990), we searched on the internet in order to include “grey literature” such as non-published dissertations and working papers.

We included studies in our meta-analysis which fulfilled four criteria: (1) for reasons of comparability all studies needed to be in English; (2) all studies had to report the correlation between IJV determinants and IJV performance; (3) the studies had to be quantitatively empirical and needed to report the necessary statistics to do a meta-analysis; (4) studies needed to report the sample size.

Meta-Analytical Structural Equation Modeling (MASEM): The Two-Step Approach

The present study investigates the role of proposed antecedents of joint venture performance with a meta-analytical structural equation model (MASEM). In contrast to traditional meta-analyses (Hunter & Schmidt, 2006) which investigates bivariate correlations between an independent and a dependent variable, a MASEM is a complex causal model with relevant variables (Brown & Peterson, 1993; Viswesvaran & Ones, 1995). A MASEM, hence, allows estimating partial regression coefficients of the model variables in which the effect of each variable is investigated while controlling other variables. Furthermore, a MASEM gives the researcher the opportunity to specify a complex set of relationships among the variables, to compare alternative theoretical models, and to evaluate how well the models fit the data (via a statistical chi-square test and diverse fit indices). Consequently, a MASEM is based on a meta-analytically derived pooled correlation *matrix* of all involved variables.

The present study relied on recent developments in MASEM methodology (i.e., the two-step approach, Cheung & Chan, 2005; Cheung, 2002) which overcomes disadvantages of earlier approaches to MASEM (Becker, 1996; Brown & Peterson, 1993; Viswesvaran & Ones, 1995). These disadvantages result from a) using the correlation matrix as direct input for the structural

equation modeling software instead of the covariance matrix and b) creating this matrix with correlation coefficients resulting from a different number of primary studies.

First, traditional ('univariate') MASEM approaches create a pooled correlation matrix by testing the homogeneity and subsequently aggregating bivariate correlation coefficients. The pooled correlation matrix is then directly used as the basis for the MASEM. However, as the estimation of parameters of structural equation models relies on the sampling theory of covariance matrices (Hayduk, 1989), using a correlation matrix biases the chi-square test of the model as well as the standard errors of the model parameters (Cudeck, 1989).

The two-step approach delivers a solution to this disadvantage by relying on approaches to investigate correlation matrices with a modified confirmatory factor model (Bentler & Lee, 1983). A confirmatory factor model enables incorporating correlation matrices because factor models rely on a covariance equation (i.e., $\Sigma = \Lambda\Phi\Lambda' + \Theta$, where Λ is the factor loading matrix, Φ is the factor covariance matrix, and Θ is the error matrix) which is similar to the equation that connects a correlation matrix to a covariance matrix (i.e., $S = DRD$, where S is the covariance matrix, D is a diagonal matrix with standard deviations, and R is the correlation matrix). To equal these equations, the factor model is modified by fixing the matrix of measurement errors (i.e., Θ) to zero, specifying the factor loadings matrix as a $p \times p$ diagonal matrix (where p is the number of investigated variables), and the factor covariance matrix as containing standardized covariances. As Cheung and Chan (2005) note, the estimates in the Λ matrix of the model have no specific meaning but enable it to use the correlation matrices of each study without biasing the chi-square test and standard errors. The modified factor model is specified as a multi-group model with the primary studies considered as groups.

The second disadvantage of univariate MASEMs is that the pooled correlation matrix is created by first testing the homogeneity of each bivariate correlation and then calculating the average correlation coefficient for each cell of the matrix. Such a procedure treats the homogeneity tests as if they were independent. The much more serious problem, however, is that because studies often differ in the number of investigated relationships, the cells of the pooled correlation matrix are based on substantially different number of studies and, hence, different sample sizes. It is not uncommon to have some cells of the matrix being investigated by only one or two primary studies whereas others being investigated by hundreds of studies. Unequal sample sizes, however, raise specifying the overall sample size on which the MASEM is based ambiguous. As the sample size is important for the calculation of the chi-square statistic, fit indices, and the standard errors of the regression effects, the choice of the sample size is critical. Researchers applying univariate MASEM routinely choose the mean sample size (arithmetic, or harmonic) or the median which determines an inappropriate sample size too high for some parts of the model and too low for others.

The two-step approach delivers a solution for this disadvantage by testing the homogeneity of the correlation matrices in one step (in contrast to separate homogeneity tests of the single coefficients) and by estimating a maximum likelihood based population correlation matrix instead of manually aggregating the correlation coefficients. This yields most probable estimates as well as allows using the sum of all used sample sizes as the sample size for the model (in contrast to the mean or median). The test for homogeneity of the correlation matrices is conducted by placing equality constraints on the entries of the matrices across the groups. Thus, the first step tests if the hypothesis that all correlation matrices are drawn from one population is tenable. The fit of this model can be used to evaluate if the homogeneity

assumption. Because, the studies (i.e., groups) differ in the number of analyzed variables, the factor correlation matrices Φ in each study--although having the same $p \times p$ dimensions--contains not all relationships for all studies. The equality constraints, thus, only affect those cells of the matrices which have numerical values.

Cheung and Chan (2005) note that even if the correlation matrices are drawn from the same populations, variations due to sampling error would be expected. Hence, just using the estimated pooled correlation matrix would ignore this variation. As a solution, the MGCFA model creates the asymptotic covariance matrix which contains variances and covariances of the studies correlations which, thus, keeps the information about the sampling error. This asymptotic covariance matrix is used together with the pooled correlation matrix as baseline in the second step to specify the structural model. Estimator is ADF (asymptotic distribution free).

Both models (i.e., the multi-group model and the theoretical model) can be evaluated regarding how well they match the empirical data. To evaluate the fit of the model analyzed in the present study, we considered the chi-square, RMSEA (root mean square error of approximation), SRMR (standardized root mean squared residual), and the CFI (Comparative fit index). The chi-square is a statistical test investigating if the proposed model structure fits perfectly in the population. Regarding the fit indexes, we followed Hu and Bentler's suggestions, (1999) that a CFI value close to or above .95, a RMSEA below .06 and a SRMR below .08 indicates a good approximate fit.

RESULTS

As aforementioned, the first step of the MASEM investigated if the 48 correlation matrices of the primary studies were homogenous. This step of analysis, hence, investigated how probable it is that the 48 correlation matrices were drawn from a single population. The test for

homogeneity was conducted in a multi-group confirmatory factor analysis (MGCFA) framework by specifying a model with 48 groups where equality constraints tested the hypothesis of homogeneity. The fit of this model, however, was substantially inadequate ($\chi^2(141) = 432.56$, RMSEA = .11, CFI = 0.0, SRMR = .033). Therefore, the hypothesis of homogeneity of the correlation matrices had to be rejected. In traditional meta-analyses, researchers react to failed homogeneity tests by identifying study variables that enable to divide the pool of correlations in homogeneous subgroups. Unfortunately, this was not possible in our case. Most of the correlation matrices were very sparse and any differentiation would have led to at least one cell of the matrices not containing any number. Thus, the pooled correlation matrix of the first step was used as the baseline for the structural equation modeling. Table 1 depicted the pooled correlation matrix.

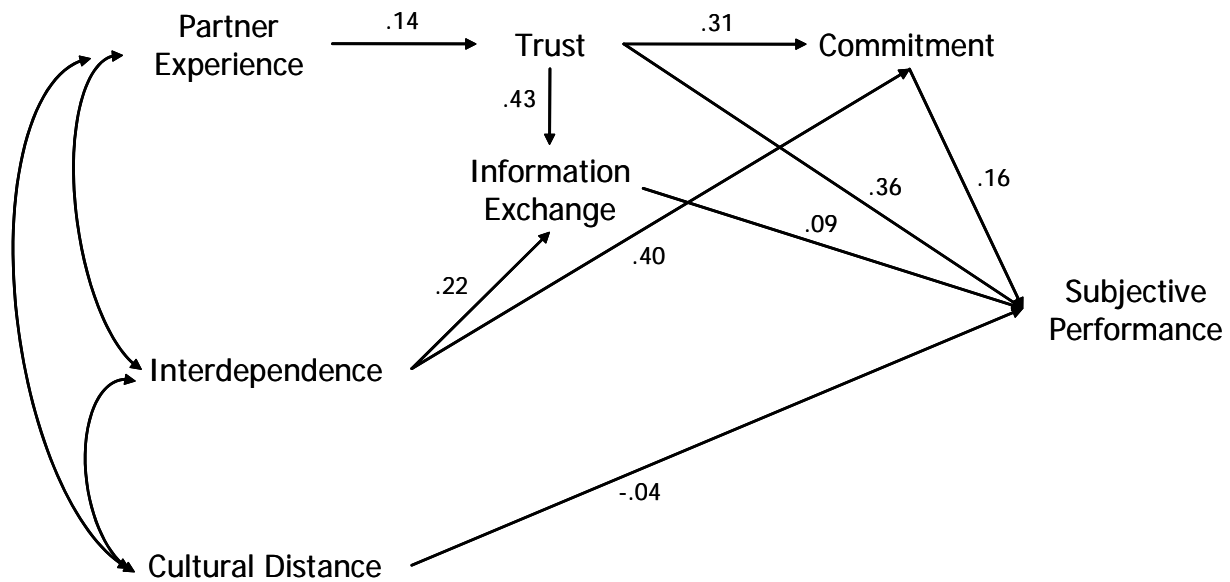
Table 1: Pooled correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)
(1) IJV Performance						
(2) Trust	.41					
(3) Commitment	.25	.28				
(4) Partner experience	.06	.18	-.14			
(5) Interdependence	.14	.17	.32	.07		
(6) Cultural distance	-.04	-.10	-.07	-.01	.01	
(7) Information Exchange	.25	.39	.34	-.23	-.23	.17

Note. Correlations > .09 are significant at $p < .05$

The structural equation model tested in the second step is depicted in Figure 2.

Fig. 2 MASEM Results



The sample size for this model was $N = 8391$; estimator was ADF (asymptotically distribution free). The fit of this model was low to moderate ($\chi^2(9) = 67.70$, RMSEA = .028, CFI = .92, SRMR = .085). The significant chi-square indicated a significant departure of the correlation matrix that is implied by the model's coefficients and the pooled correlation matrix. Although the chi-square test has enormous power with the given the large sample size, this result may indicate that the model has a misspecified structure. The RMSEA showed a good fit whereas the CFI and the SRMR did not. One conspicuous residual (i.e., difference between a model implied correlation and the pooled correlation) referred to the correlation between interdependence and trust. The pooled correlation between both variables was $r = .17$ whereas the model postulated a nonsignificant correlation (given by the product of the correlation between partner experience and interdependence times the regression effect of partner experience). Therefore, our postulated model failed to account for the existing correlation. As we assumed that a direct effect of interdependence on trust would most likely account for the

correlation, we re-specified the model and estimated a direct effect of interdependence. The estimation of the effect improved the model tremendously ($\chi^2(8) = 43.00$, RMSEA = .023, CFI = .95, SRMR = .081). The remaining regression coefficients, however, remained almost unaffected: the correlation between the parameter estimates of the initial model and those in the re-specified model was .98.

As Figure 2 shows, most of the hypotheses were supported: Partner experience was related to trust (H1, $\beta = .14$, $p < .01$) and trust was related to commitment (H2, $\beta = .31$, $p < .01$). Furthermore, trust (H3, $\beta = .43$, $p < .01$) and interdependence (H4, $\beta = .22$, $p < .01$) emerged as predictors of information exchange. Interdependence, in addition, had a direct effect on commitment (H5, $\beta = .40$, $p < .01$). As assumed, the three direct antecedents of IJV performance were information exchange (H6, $\beta = .09$, $p < .01$), Trust (H7, $\beta = .36$, $p < .01$), and commitment (H8, $\beta = .16$, $p < .01$). Finally, cultural distance was only weakly albeit significantly related to IJV performance (H9, $\beta = -.04$, $p < .05$).

DISCUSSION

The purpose of this study was to provide an empirical synthesis of prior research by testing a theoretical model proposing a complex causal structure among antecedents (i.e., partner experience, trust, interdependence, commitment, information exchange, and cultural distance) of IJV performance.

Most notably, trust and commitment emerged as most important antecedents of IJV performance whereas the other variables were related to IJV performance mediated by these core antecedents. For instance, partner experience (i.e., experience resulting from past collaboration with the same partner) was positively associated with trust. Thus, partner experience enables a cooperation based on trust, and therefore indirectly enhances IJV performance. Besides the direct

effect on IJV performance, the results for trust also indicate strong associations with information exchange and commitment. Therefore, trust seems to be pivotal to collaborating successfully with other partners. In turn, commitment – which was also affected by interdependence – was positively associated with IJV performance underscoring its value for successful IJVs.

We found positive and significant associations between interdependence and information exchange. It appears to be an optimal situation for enhancing IJV performance. When both partners are highly dependent on each other to accomplish their strategic goals, the need for a continuous mutual relationship increases. At the same time, with both having much to lose, partners are unlikely to engage in opportunistic behavior (Robson et al. 2002). In addition, when both partners recognize that the advantages of interdependence provide benefits greater than either could attain singly, each is more willing to continue transferring relevant resources and information to the IJV.

Results indicated that information exchange has a weak but significant effect on IJV performance. Continuous learning and access to know-how guarantee sustainable company development, competitive leadership through access to technology, as well as innovative managerial practices. The weak effect may be due to heterogeneity of findings indicating that further moderators influence the relationship between information exchange and IJV performance.

Results indicated that cultural distance is not directly related to IJV performance, possibly due to the adequacy of different culture measures. A bulk of studies use the distance of the weighted average of Hofstede's or Globe's culture dimensions while others only use single dimensions. Cultural distance as an aggregate of perceived individual values may not be suitable for different level of analysis (Tihany et al. 2005). Maseland and van Hoorn (2009) state that

measuring cultural values in general suffers from serious problems and Brouthers and Brouthers (2001) and Shenkar (2001) outline a number of potential problems with this measurement of the cultural distance construct. Advanced measures of cultural distance may improve the construct validity of future cultural distance measures.

Moreover, the lack of significant results supports Pothukuchi et al. (2002), who claim that differences in the organizational culture are more likely to influence IJV performance than differences in national cultures. Furthermore, the studies only measured the distance or diversity of cultures. However, the compatibility of partners' cultures should have a stronger impact on the IJV performance.

Another explanation could be that organizational friction resulting from different cultural perceptions among partners may be outweighed by the knowledge and experience each partner can offer the other, bridging the cultural distance. Thus, cultural distance on the one hand creates tension between partners, hampering business processes. On the other hand, it creates multiple learning opportunities which may increase the firm's performance due to improved perception of stakeholders' needs in the distant market.

LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

This study used a modern approach to investigate meta-analytically structural equation model (MASEM) which has several advantages compared to traditional univariate meta-analytical approaches as well as traditional MASEM approaches. Beyond these strengths, we faced several problems that should lead to care when interpreting the results.

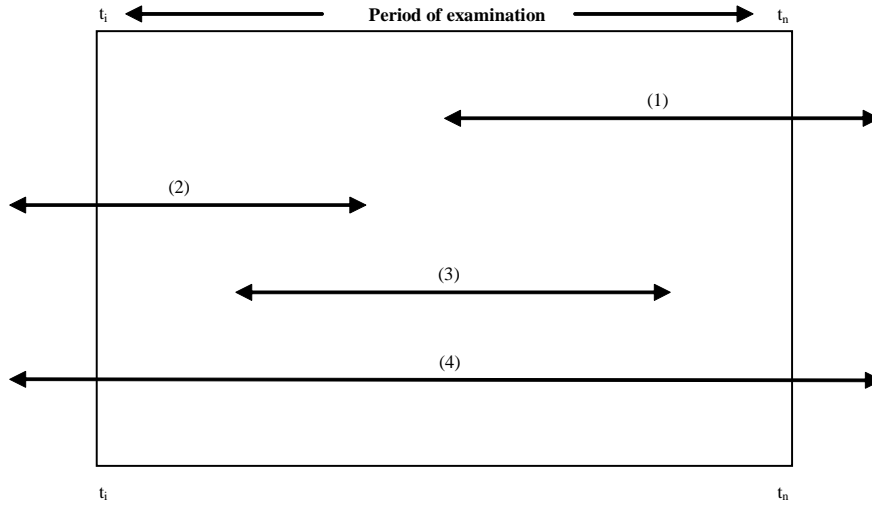
Although our meta-analytical results are based on a broad sample of empirical studies, for 27 of the studies the necessary correlation coefficients were not available. Although MASEM

can most effectively deal with missing correlations, their number was severe. This is a problem inherent to MASEM, as some correlations (e.g., among independent and dependent variables) are of special interest and, thus, investigated frequently, whereas others (e.g., among independent variables) are analyzed much less frequently. In several studies, we had only one or two correlation coefficients as input for the MASEM. Future joint venture research, hence, should fare more often collect data beyond the bivariate relationship of interest.

As a further problem, the first step investigating the homogeneity of the correlation matrices failed. Although authors have warned not to include heterogeneous correlation matrices and proposed to investigate moderators that serve to create homogenous subsamples this was not possible in the present study. Any attempt to use coded attributes of the primary studies to create subsamples resulted in the occurrence of at least one correlation not analyzed by even one of the primary studies in the samples. Consequently, we had to estimate the pooled correlation matrix at the same time knowing that the studies are heterogeneous. Therefore, we regard the tested model as preliminary result and hope that an increased number of future studies with a broader array of analyzed variable will make it possible to investigate moderators.

Another limitation of our work is that many studies suffer from imprecision with regard to the “Window of Observation”. As Figure 3 shows, studies are often a mix of observations of IJVs that (1) began, (2) ended, (3) both began and ended during period and (4) persisted throughout the observation period (Buckley and Glaister, 2002).

Fig. 3: Window of Observation



The effects of the determinants on IJV performance may differ throughout the IJV life cycle, and may therefore provide an explanation for the substantial unexplained variance.

Our study has implications for further research and strategy. This meta-analysis certainly does not presume to be the conclusive study in this field of research. Quite the contrary; due to the heterogeneity and the partial limited number of studies within the subsamples, our meta-analysis highlights that further identification of variables influencing IJV performance - also including replication studies - should remain a focus of further research. Measurement inequivalence, especially for latent variables, is an additional problem. Reliability estimates are likely to be low when the same construct is measured differently, and thus, future research must identify which measures precisely capture the relevant constructs. This would not only improve the construct validity but also enhance the comparability of results and, therefore, facilitate drawing more general conclusions. To improve the replicability of research findings, future studies should further include basic statistics (means, standard deviations, and correlations) as these data are necessary for secondary research, especially meta-analysis.

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1 References marked with * indicate those studies included in the meta-analysis