

MEASURING INTANGIBLE VALUE DRIVERS FOR BUSINESS PARTNERSHIP PERFORMANCE

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Abstract

This paper contributes to the field of alliance research by extending and testing the research framework of Moeller (2006) in a specific research setting. Singularly relating behavioral value drivers to financial performance of alliances ignores intangible performance components. This research shows that behavioral value drivers directly affect alliance performance and, additionally, indirectly affect intangible performance. The direct relationship to tangible performance is found to be positively significant for six value drivers: trust, commitment, open communication, strategic interdependence, participation, and coordination of work. The only variable not being significant is the one of symmetry.

The indirect relationship by means of intangible performance shows a positive effect of the value drivers of open communication, strategic interdependence, participation, and coordination of work. Overall, symmetry does not have any impact on performance. The closely related drivers of trust and of commitment are important for the overall performance of business partnerships but do not increase the performance of specific intangible components.

1. Introduction

Business alliances and partnerships have become increasingly important over the last decades. In fact, Anand & Khanna (2000) reported 20,000 new alliances worldwide in the two-year period of 1998-2000. However, the high popularity of alliances is connected to an equally high failure rate. Long-term successful alliances are rare, with reported failure rates of around 55% after one year and a further increase over time (Kogut, 1989). A multitude of problems, can lead to a breakdown of the inter-firm co-operation. For instance, the inappropriate choice of governance structures (Williamson, 1985), the incompatibility of corporate cultures and systems (Kale, Singh & Perlmutter, 2000), and the lack of trust (Arino & De la Torre, 1998) are reported as reasons of failure. The importance of business alliances and partnerships in the business world is also reflected in the academic literature. Over the last two decades, a vast amount of academic studies have focused on inter-organizational alliances. In the late 1980s, the perspective used transaction cost economics to explain the existence of alliances in order to achieve low transaction costs (Rao, 2003). Subsequently, the research perspective shifted to a functional focus on economic, managerial, financial, and strategic aspects of alliances (Lin & Germain, 1999). This included e.g. the motives to form alliances, the characteristics of partner selection, and of business alliance (Kogut, 1988; Bleeke & Ernst, 1991; Parkhe, 1993b; Gulati, 1995a; Kumar and Seth, 1998). However, this perspective disregarded soft factors such as trust and commitment, which are of basic importance for a business partnership (Anderson & Narus, 1990; Kauser & Shaw, 2004; Mohr & Spekman, 1994; Robson et al., 2006; Saxton, 1997). The more recent academic literature has recognized this absence and has moved to adopt a stronger behavioral perspective. Several studies relate behavioral factors to alliances' success, finding a significant impact on the performance of alliances and partnerships (Morgan and Hunt, 1994; Ring & Van de Ven, 1994; Inkpen & Li, 1999). This stream of research nevertheless continues to suffer from several drawbacks: the lack of a sound theoretical base for hypothesis development, problems in conceptualizing and employing behavioral variables, an absence of longitudinal studies, and a focus limited to the direct relationships between behavioral attributes and alliance performance (Robson et al., 2006).

The purpose of this paper is to broaden the relationship between behavioral attributes and alliance performance. It attempts to do so by means of analyzing the relationships between three sets of variables: behavioral attributes and intangible performance, between behavioral attributes and tangible (financial) performance, and between tangible and intangible performance. These relationships are empirically investigated using two survey questionnaires, addressing the partnerships between a software development company (hereafter focal company) and its independent sales partners in the software vendor industry (hereafter external partners). The contribution of this paper is fourfold. First, this paper attempts to employ theoretical models grounded in preceding academic studies to develop well-founded hypotheses as proposed by Yan & Gray (2001). Agency theory, the resource-based view of the firm, and transaction cost economics provide the bases for hypothesis development.

Second, the paper tries to overcome a singular focus on direct links between behavioral attributes and the performance of alliances and partnerships. For this purpose, the concept of intellectual capital is deployed. Based on the intellectual capital constructs as defined by Bontis (1998), behavioral attributes are linked via intangible performance measures, which are human, structural, and customer capital, to tangible performance measures such as revenue. This enables analyzing whether the partnership attributes have a direct or an indirect link to the tangible success of partnerships.

Third, this paper contributes to the increasing amount of academic studies of alliances and partnerships. However, since this field of study has to embrace a large number of contingencies and different settings, it is difficult to extract broadly valid general conclusions. Consequently, industry specific studies can potentially explore novel aspects of alliance performance, and can further explain the determinants of alliance success.

Fourth, this study is one of the few that attempts a dyadic analysis of business partnerships. That is, the survey is conducted both with the managers of the external partners and with their counterparts at the focal company. Matching the respondents' answers on both sides of the relationship enables an analysis of the so-called perception gap. The question behind the perception gap is whether differences in perceptions about an alliance held by both partners, affect its performance.

2. Definition of partnerships and alliances

The existing lack of a common definition business partnerships and alliances can be partly explained by the large variety in types of alliances and partnerships. As a result, it is helpful to first provide an overview of the different types of alliances and partnerships before discussing the one type analyzed in this study. Spekman et al. (2000, p. 36) define alliances as everything on the continuum between the two extremes of arm's length transactions in the open market, and mergers and acquisitions. On this continuum, they distinguish four different types of alliances and partnerships classified according to the two criteria of the degree of control and the degree of commitment. The lowest level of control and commitment in an alliance is required by the first type of alliance: a contractual agreement without shared risks and rewards (e.g., franchising or distribution agreements and contract manufacturers). The second type of alliance is characterized by contractual agreements with shared risks and rewards (e.g., co-marketing, preferred suppliers). The next two types of alliances and partnerships with higher levels of control and commitment are based on either minority or on shared equity ownership (e.g., joint ventures). Spekman et al. (2000, p. 37) define alliances as "...a close, collaborative relationship between two, or more, firms with the intent of accomplishing mutually compatible goals that would be difficult for each to accomplish alone". This definition already implies important characteristics of an alliance and partnership that influences the probability of its success: firms have to join alliances voluntarily and should have similar goals. Kale et al. (2002) define alliances in a similar way as "...any independently initiated inter-firm link that involves exchange, sharing or co-development", which includes e.g. R&D alliances or marketing and distribution agreements. For the purpose of this paper and based on the definition of Elmuti & Kathawala (2001, p. 205) "*strategic alliances are partnerships of two or more corporations of business units that work together to achieve strategically significant objectives that are mutually exclusive*", the terms alliance and partnerships are used interchangeably throughout this paper.

This study focuses on alliances in the software sales industry. As a result, the specific emphasis is on marketing and distribution alliances. According to a study of Coopers and Lybrand in the United States from 1997, firms in the software sales industry were strongly active in joint marketing and promotion (54% of firms participating in alliances) as well as joint sales and distribution (42%) alliances (Elmuti & Kathawala, 2001). Hagedoorn (1993) further identified marketing alliances as one major type of partnerships, co-operating in downstream activities of the value chain such as sales, distribution and customer service. The focal company in this study is a multinational firm in the software industry that usually does not have direct contact with the final customers. Its entire marketing and promotion strategy is predominantly centralized, providing for the necessary public attention for new products and software display and advertising equipment for its independent sales partners. The actual software sales are fully performed by the sales forces of the partners. However, both sides of the partnership do not hold ownership stakes in the alliance, using instead contractual agreements with shared risks and rewards. Therefore, based on the definition above, the partnerships of the focal company can best be described as dyadic, strategic-sales alliances.

3. Research design

The majority of academic literature in the field of alliance performance contains a substantial amount of studies relating behavioral attributes to alliance performance. Most studies of this kind were performed after 1995 in different settings. For example, Chan et al. (2004) have analyzed critical success factors in construction project alliances by linking potential value drivers to partner's perception of alliance performance, finding that conflict resolution techniques, commitment and symmetry are essential. Kauser & Shaw (2004) related behavioral and organizational characteristics to alliance success and found that behavioral value drivers such as trust, commitment, coordination, interdependence and communication have the most impact on alliance success.

Mohr & Spekman (1994) regress three behavioral partnership characteristics (attribution of partnership, communication behavior, and conflict resolution) on performance and found that commitment, coordination, trust, communication, and participation increased the alliance performance. Saxton (1997) found partner reputation, joint planning and joint goals to be relevant for partnership performance. Smith & Barclay (1999) did not only relate behavioral characteristics to performance but, instead, studied the relations between different value drivers, identifying trust and cooperation as mediating variables. A valuable overview of international strategic alliance value drivers and their link to performance was provided by Robson et al. (2006).

The research design of this study follows Kauser & Shaw (2004), as it also predominantly focuses on behavioral attributes as value drivers with the latter acting as the independent variables. Organizational characteristics are not included as value drivers but, instead, used as control variables.

However, in contrast to most other studies, this paper differentiates between two types of performance measures: the ones directly related to alliance performance in terms of revenues, which are labeled tangible performance (Hypothesis 2). And the ones that are defined as intangible performance (Hypothesis 1) and linked to three intellectual components, namely human capital, structural capital, and customer capital. Moreover, the relationship between intangible and tangible performance measures and, thus, the indirect link between behavioral value drivers and tangible performance is tested (Hypothesis 3). The resulting research framework (see figure 1) is based upon the initial, network-partnering research design by Moeller (2006) but extends it by including additional, potential value drivers.

The inclusion of intellectual capital performance measures in contrast to Kauser & Shaw (2004) is based on Bontis (1998). The inclusion of these intangible performance indicators is justified to deepen our insight in several aspects. First, non-financial measures are often considered as leading indicators for financial performance of alliances (Bontis, 1998; Ittner et al., 2003; Lipe & Saltario, 2000), which supports the hypothesis between tangible and intangible performance. Moreover, Bollen et al. (2005) also find a positive relationship between intellectual capital indicators and firm performance thus further justifying the inclusion of intangible performance measures. However, they included intellectual property (e.g., patents) in contrast to Bontis (1998). In a partnership context, intellectual property plays a less important role; this is also the case in the sales alliances of the focal company analyzed in this study. Second, following Marr et al. (2003), intangible assets such as intellectual capital are considered a key source of competitive advantage throughout all industries but the importance of these intangible assets increases especially in the service and knowledge-based economy. Consequently, IC-based measures are included to improve our understanding of performance in a contemporary setting. Third, the strategic alliances analyzed in this study are limited to arrangements between one large, international software company (the focal company) and its many sales and after-sales service partners (the partners). This setting of a mainly knowledge-based industry both recognizes and favors measures of intangible performance.

4. Hypotheses development

Three main theories can be deployed to arrive at the final hypotheses concerning trust: transaction-cost economics (TCE), agency theory, and game theory. The first two are market-based theories and are categorized as incomplete contracting theories basing on Coase's (1937) theorem about the theory of firm boundaries. TCE is thoroughly discussed by Williamson (1985) and explains the degree of vertical integration from the perspective of lowest transaction costs. Important factors in this respect are asset specificity, uncertainty and frequency between companies of a certain market (Spekle, 2001; Dekker, 2004). Agency theory, according to Eisenhardt (1989), is concerned with two problems; the situation in which the goals of the principal and the agent are conflicting while it is costly to verify the actions of the agent, and the problem of risk sharing when the principal and the agent have different risk perceptions and, consequently, tend to initiate different actions. Both theories of incomplete contracts recognize information asymmetry and uncertainty as the key sources for potential opportunistic behavior of an alliance partner in the face of unforeseen circumstances. Opportunistic behavior can lead to higher transaction costs, *"which may not only become manifest to an outsourcer in high prevention, security and conflict-solving costs but also in missed profits (opportunities foregone)"* (Vosselman & van der Meer-Kooistra, 2006, p. 320). In this context, trust can be a solution to the problem of potentially opportunistic behavior. Based on the above-mentioned definition, trust is expected to lower behavioral uncertainty and information asymmetry, and to improve the overall alliance performance.

The third theory, the two-by-two non-cooperative game theory, describes a situation in which two participants can either chose to be honest or to cheat. Mutual honesty allows for the highest total payoff whereas the lack of trust potentially leads to mutual cheating, resulting in a prisoner's dilemma (Casson, 1991). A prisoner's dilemma is mainly observed in games with a small number of rounds. In contrast, in multi-period games, trust can be established, which prevents opportunistic behavior and, consequently, increases the total payoff. Translated to the setting of business alliances and partnerships, trust induces firms to take mutual beneficial actions because of the trustworthy expectation that the alliance partner will reciprocate in a similar manner. The long term benefits of trustful behavioral are expected to outweigh the short term gains of opportunistic behavior (Parkhe, 1993a,b).

Trust can improve knowledge flow, co-ordination, and reliability and fairness in the context of alliances. As these points are effectively related to all levels of performance, we postulate a positive relation of trust to intangible as well as tangible performance in business alliances (BAs) (H1/2a).

Social exchange theory can be employed to further develop the assumed positive relationship between commitment and alliance performance following leads from the alliance literature (Hosmer, 1995; Jacobs, 1974; Levine & White, 1961) (H1/2b).

Resource-based theory can assist in developing the hypothesis concerning open communication. According to the resource-based view, business alliances and partnerships are seen as means to acquire complementary necessary resources (Roberts, 2003; Barney, 1991; Gulati, 1999; Das & Teng, 2000a,b; Marr,

2006). In contemporary business environments, the key resource needed is often intangible (Hagedoorn, 1993), as is also the case in this paper (H1/2c).

Kumar et al. (1995, p. 349) define strategic interdependence as “*a firm’s dependence on a partner [and] as the firm’s need to maintain a relationship with the partner to achieve its goals*”. Alliance partners can achieve different goals with the help of a business partnership such as entering new markets, obtaining new technology, sharing research and development costs, ensuring competitive advantage (Elmuti & Kathawala, 2001). The idea of a higher total performance in case both interdependent partners cooperate effectively provides the basis for the game theory perspective (H1/2d).

With respect to the effect of asymmetric interdependence on alliance performance, the focus is less on the partner’s resources and the potential to combine them and more on the partner’s resource-related bargaining power. The relative larger power of the less dependent partner having more resources could be used to dominate the relationship with its own individual goals (Geyskens et al., 1996). These unbalanced partnerships with asymmetric interdependence are more vulnerable to dysfunctional behavior (Anderson & Weitz, 1989). We therefore postulate a higher level of symmetry to have a positive relation to BA performance (H1/2e).

Participation is referred to by Mohr & Spekman (1994, p. 139) as “*the extent to which partners engage jointly in planning and goal setting*”. McKee (1994) notably appreciates joint planning as it signals the importance of a partnership for the participants and, thus, has a symbolic value. The signaling effect arises due to the joint effort in planning, which shows the alliance partners’ commitment and potentially increases their interest in the outcome (Anderson et al., 1987). The positive effect of participation on alliance performance can also be encountered in empirical academic research. Discoll (1978), Kauser & Shaw (2004), Mohr & Spekman (1994), and Saxton (1997) all find a significant positive relation between the level of participation and performance (H1/2f).

The work coordination problems in strategic alliances form another important obstacle for the success of business partnerships (Elmuti & Kathawala, 2001). Kauser & Shaw (2004, p. 21) define coordination of work as “*...the extent to which two companies are integrated within a relationship*”. The importance of coordination costs becomes apparent in the analysis of managerial and organizational challenges (Park & Ungson, 2001). Grandori & Soda (1995) appreciate work coordination between firms as an answer to market failures, pointing out that alliances are not merely the second best solution but, instead, can be seen as optimal hybrid forms of organizational structure (H1/2g).

The increasing importance of intangible assets for companies across all industries is reflected in academic research studies, providing a large number of diverse models and frameworks that capture different parts of intangibles. For example, Bontis et al. (1999) argue in favor of four main tools to measure and manage intangibles; Human Resource Accounting (HRA), Economic Value Added (EVA), Balance Scorecard (BSC) and Intellectual Capital (IC). As the BSC (Kaplan & Norton, 1992) has received an abundant amount of attention as the main tool in the last decade, both the practitioner as well as academic worlds have partly shifted interest to the concept of IC. This concept was mainly developed and enhanced by practitioners who came to realize that the existing frameworks were not able to capture all aspects of intangible assets (Bontis et al., 1999). As a result, the first advances regarding IC frameworks were developed by large firms such as Skandia and Dow Chemicals. For example, the Skandia Navigator Model (Edvinsson, 1997) is considered the first coherent framework of IC (Bontis, 2001). It includes five components of intangibles; financial, customer, process, renewal and development, and human capital. Based on the Navigator model, other IC frameworks and tools were subsequently developed. As the need for and the use of IC frameworks in the business world increased, the academic world primarily focused on theory building and conceptualization at the expense of empirical testing (Marr et al., 2003), and resulting in a relative lack of empirical academic work that substantiates and verifies why firms might increase their focus on IC. For example, empirical evidence of the relevance of IC for performance is shown by Bollen et al. (2005), who find intermediate positive relationships from IC to intellectual property and from intellectual property onward to firm performance. We, therefore, postulate that the higher the level of intangible performance as defined as consisting of human, customer, and structural capital in business alliances, the higher is the level of tangible performance (H3).

With respect to tangible performance, several additional arguments need to be considered. A key argument concerns the concrete tangible measurement of alliance success. We consider as the least biased way the use of existing financial metrics such as sales growth, profit growth, return on assets, and return on investment. Gathering the data for these metrics, however, is far less straightforward as it seems.

5. Methodology

This paper focuses on vertical alliances in the context of the software sales industry. More specifically, it aims at dyadic sales alliances between the national branch of a large international software firm (the focal company) and its partners in Belgium and Luxembourg. The contact data of the external partners were provided by the focal company which has several thousand partnerships. Of interest were only the more important partnerships, which are characterized by a closer relationship between the focal firm and its partners in terms of frequent communication and interaction. In order to filter out these relevant partnerships, only partners that are certified by the focal company were selected. In addition, only partner firms were selected whose executives agreed to be

contacted; this selection procedure provided 213 potential respondents. Whereas the partner firms' executives were the respondents in this survey, the unit of analysis is the relationship between the focal firm and its partner firm. Thus, the respondents were asked to express their opinion as representatives of their employer and not their attitude as an individual. As this survey took place in the software industry, the internal validity of this study is expected to be high. However, the external validity and, therefore, its generalizing power will suffer because of specific industry characteristics relevant for the alliances focused on in this paper. Apart from the main questionnaire survey with the 213 external partners, an identical survey was conducted with their counterpart managers of the focal company. Upon concluding the first survey with the external partners, the valid responses were collected and used to develop a new sample for the second survey. The second survey addressed only those partner managers of the focal company that had external counter-partners which had submitted a valid questionnaire. By matching the external responses with the questionnaire results of the focal counterpart managers, the differences in the perception of both parties regarding the alliance was analyzed.

A first analysis included testing the survey data for normality. The Kolmogorov-Smirnov test indicated that the answers of the different variables in this study are not normally distributed as only one variable had a p-value slightly above 5%, which would indicate normality. This finding is crucial for the subsequent further analysis, in which only non-parametric statistical tests are used as they do not require the variables to be normally distributed. In order to evaluate the non-response bias, the characteristics of the 32 respondents of the first invitation were compared to the 19 late respondents of the reminder emails. A non-response error occurs "*when the responses of participants differ in some systematic way from the responses of non-participants*" (Blumberg et al., 2005, p. 255). The most suitable approach to test for non-response bias is to compare the characteristics of the entire population against the sample population. As the characteristics of the non-respondents were lacking, the test of non-response bias was alternatively performed by comparing the early with the late respondents. Given the non-normal distribution of the variables, the non-parametric Mann-Whitney test was used. It showed that the characteristics of the two groups did not differ when analyzing the control variables, the latter of which are explained below. The results indicated insignificant p-values at all reasonable significant levels for the control variables. We therefore conclude that a non-response bias is not present in this study.

To incorporate the value driver constructs in the survey, three items were used for the seven behavioral characteristics, resulting in 21 short questions. For each of those, a five-point Likert scale was used. Cronbach's alpha statistic was employed to test for the reliability of the constructs and increase the internal consistency of the study. Statistics for the seven behavioral constructs can be found in Table 1.

	3 items		2 items
	Cronbach's alpha (Standardized)	Exclusion of item	Cronbach's alpha (Standardized)
Trust	0.809		
Comm	0.426	Comm1	0.664
OpenCom	0.620	OpenCom3	0.739
StraInd	0.713		
Sym	0.063	Sym3	0.577
Part	0.714		
CoWork	0.715		

Table 1. Test of reliability

The initial Cronbach's alpha test showed that the four value-driver constructs (trust, strategic interdependence, participation and coordination of work) are above the required value of 0.7. However, three constructs have alpha values below 0.7 which led to the exclusion of one question per construct, based on an inter-item correlation analysis. The exclusion of question number three on the construct 'open communication' resulted in a sufficient increase of the Cronbach's alpha score. The exclusion of question one on the construct 'commitment' and question three on the construct 'symmetry' did increase the alpha values but not above the required value of 0.7. However, as the alpha values of 0.663 and 0.542 do not deviate strongly from the required value of 0.7, the two constructs were not withdrawn from the analysis. Yet, they have to be interpreted with caution.

6. Results

Despite the non-normal distribution of the observations, the main tool to investigate the survey results is regression analysis. A series of regressions is conducted based on the three main relationships between value drivers and IC (H1), value drivers and tangible performance (H2), and intangible and tangible performance (H). Furthermore, the relation between the different IC components is analyzed in a fourth step. In all regressions the five control variables are incorporated. Thus, for each of the regressions related to Hypothesis 1 and 2, one value driver and the five control variables are included as independent variables. This approach was followed because the multiple regressions mainly resulted in insignificant results for the beta-coefficients, although the overall model was highly explanatory. The above-discussed high inter-correlations between the value drivers are

considered to be the main cause of these results. In contrast, single regressions clearly show the relevance of the variables used. However, the disadvantage of the approach is that a path analysis, which differentiates between direct effects between value drivers and tangible performance and indirect effects through IC measures, cannot be conducted. The path loadings would only reflect the true values when using multiple regression results.

The first hypothesis states that the higher the level of value driver variables, the higher the level of intangible performance. In seven regressions with five control variables and one value driver, four out of seven value drivers are found to be significantly related to IC with positive beta-coefficients (see Table 2). The value driver variables are open communication (beta = 0.452, t = 3.591 significant at $\alpha = 1\%$), strategic interdependence (beta = 0.396, t = 2.785 significant at $\alpha = 1\%$), participation (beta = 0.517, t = 3.985 significant at $\alpha = 1\%$), and coordination of work (beta = 0.408, t = 3.063 significant at $\alpha = 1\%$). Additionally, these four show adjusted R² values in a range of 20.7% to 31.4%. The other three independent variables show either a weak relationship (the symmetry variable) or no relationship (the trust and commitment variables).

Unexpectedly, the relation to structural capital shows to be of stronger significance than the regression results on human capital and customer capital when analyzing the relationship between the seven value drivers and the three individual components of IC (Table 2). Out of the seven regressions, only the relation between commitment and structural capital is shown to be non-significant. Overall, it has to be concluded that the attempt to use objective measures, in addition to the subjective metrics, was unsuccessful. One possible explanation we venture is that the measures capture only one very specific and limited part of the IC components in contrast to the more encompassing subjective measures. Due to the insignificant results, the objective IC results are not further discussed.

	Dependent Variables	Subjective Measure				Objective Measure	
		HC	CC	SC	IC	HC	SC
Trust	Adj. R ²	0.04	0.05	0.12	0.08	0.05	0.16
	F statistic	1.34	1.45	2.12*	1.71	1.40	2.62**
	beta coefficient	-0.19	0.10	0.35**	0.10	0.04	0.12
Comm	Adj. R ²	0.02	0.05	0.02	0.07	0.05	0.17
	F statistic	1.17	1.44	1.18	1.63	1.45	2.71**
	beta coefficient	-0.13	0.10	0.17	0.05	-0.08	0.15
OpenCom	Adj. R ²	0.05	0.10	0.37	0.28	0.05	0.16
	F statistic	1.42	1.89	5.90***	4.22***	1.43	2.62**
	beta coefficient	0.21	0.23	0.61***	0.45***	0.07	0.13
StraInd	Adj. R ²	0.09	0.10	0.09	0.21	0.07	0.17
	F statistic	1.87	1.90	1.78	3.17***	1.58	2.65**
	beta coefficient	0.32**	0.25	0.33**	0.40***	-0.15	0.14
Sym	Adj. R ²	0.01	0.07	0.09	0.12	0.05	0.19
	F statistic	1.04	1.65	1.85	2.13*	1.41	2.90**
	beta coefficient	0.04	0.19	0.33***	0.24	0.05	0.21
Part	Adj. R ²	0.03	0.20	0.35	0.31	0.07	0.18
	F statistic	1.23	3.12**	5.44***	4.82***	1.65	2.80**
	beta coefficient	0.16	0.42***	0.62***	0.52***	-0.18	0.18
CoWork	Adj. R ²	0.02	0.11	0.28	0.23	0.04	0.23
	F statistic	1.21	1.99*	4.28***	3.50***	1.39	3.57***
	beta coefficient	0.15	0.26*	0.54***	0.41***	0.00	0.30***

Note: Significance levels are indicated as: * 0.1, ** 0.05, *** 0.01

Table 2. Link between value drivers and intangible performance (Hypothesis 1)

The second set of hypotheses describes the direct relationships between value drivers and tangible performance. Looking at the adj. R², F-statistics, beta-coefficients and related significance levels, it can be observed that the proposed relationships of hypothesis 2 are stronger and more significant than the proposed relationships of hypothesis 1. Six out of seven value drivers show relatively stronger significant positive results, with beta-coefficients ranging from 0.284 to 0.672 and being significant for five variables at α -levels of 1% and for one at 5%. The only exception is the symmetry variable that is insignificant with a p-value for the beta-coefficient of 0.24. In line with these results, the adj. R² of the regressions of the second hypotheses are higher with values varying between 18.6% and 55%, and F-statistics that are significant five times at α -levels of 1% and once at 5% (Table 3). The analysis of the three components of the REV (revenue) construct shows that the beta-coefficient of the third revenue variable (expected degree of goal achievement in the future) is significant at $\alpha = 1\%$ and $\alpha = 10\%$ for the variables commitment and symmetry. In contrast, the first two revenue measures on the degree of goal achievement related to the level of and the growth in revenue, are not significant at all for these two variables.

The third hypothesis, on the relationship between intangible and tangible performance, is similarly investigated by a series of regressions between the scaled value of IC and its three components as independent

variables, and the scaled tangible performance measure as well as the three individual measures as dependent. The basic relationship between the scaled-measure IC and the scaled tangible measure REV is significant and positive. The regression gives an adj. R² of 25%, strongly significant F-statistics, and a beta-coefficient of 0.393 significant at $\alpha = 1\%$. A more detailed analysis of individual IC components shows that human capital explains less variation of the scaled revenue variable with an adj. R² of 12.9 % and an F-statistic being only significant at $\alpha = 10\%$. Moreover, human capital's beta-coefficient is not significant in contrast to strongly significant values for customer and structural capital (see Table 4).

	Dependent Variables	Rev1	Rev2	Rev3	REV
Trust	Adj. R ²	0.22	0.06	0.22	0.25
	F statistic	3.34***	1.51	3.41***	3.76***
	beta coefficient	0.29**	0.16	0.47***	0.38***
Comm	Adj. R ²	0.16	0.04	0.20	0.19
	F statistic	2.57**	1.32	3.11**	2.90**
	beta coefficient	0.16	0.07	0.45***	0.28**
OpenCom	Adj. R ²	0.30	0.23	0.08	0.30
	F statistic	4.64***	3.46***	1.69**	4.63***
	beta coefficient	0.41***	0.44***	0.28*	0.44***
StraInd	Adj. R ²	0.21	0.15	0.26	0.32
	F statistic	3.26***	2.52**	3.91***	4.84***
	beta coefficient	0.30**	0.37**	0.54***	0.49***
Sym	Adj. R ²	0.14	0.03	0.09	0.13
	F statistic	2.31*	1.29	1.82	2.28*
	beta coefficient	0.06	0.04	0.31*	0.17
Part	Adj. R ²	0.40	0.33	0.31	0.52
	F statistic	6.50***	5.16***	4.75***	9.98***
	beta coefficient	0.54***	0.57***	0.58***	0.67***
CoWork	Adj. R ²	0.39	0.33	0.38	0.55
	F statistic	6.31***	5.17***	6.20***	11.17***
	beta coefficient	0.51***	0.55***	0.63***	0.67***

Note: Significance levels are indicated as: * 0.1, ** 0.05, *** 0.01

Table 3. Link between value drivers and tangible performance (Hypothesis 2)

As a fourth step, the relationships between intellectual capital components were investigated, using three multivariate regressions that include five control variables. This analysis is performed in addition to the tests that were to verify the implicit assumption of the research framework, i.e., that there are no interrelations between IC measures. This assumption led to a basic model in contrast to, for example, Bontis' (1998) suggestion a diamond-shaped causal pattern where human capital is only related to structural and customer capital, which in turn are related to a tangible performance measure. The first regression with structural and customer capital as independent variables and human capital as dependent variable, does not provide any significant values for the model (adj. R² = 47.6%, F-statistic = 1.798, p-value = 0.112) or for the beta-coefficients with p-values of 0.23 and 0.147 for customer and structural capital (Table 5). In contrast, the alternative models with human and structural capital as well as human and customer capital as independent variables show an adj. R² of 54.2% and 51.9% as well as F-statistics significant at 5%. Strikingly, both models indicate a positive relationship between structural capital and customer capital with a beta-coefficient of around 0.3 (t-value = 2.151, p-value = 0.037). Apart from this relationship, no other relationships between IC measures were found.

In the last step of the statistical analysis, the results related to a possible perception gap are investigated. Due to the low sample size of 14 observations for each of the two groups, only basic statistical tests could be performed. Results can thereby only be considered as indicative, not as statistical proof. As a first test, an independent-samples t-test was conducted to analyze the differences in means between the sample of focal company partner managers and the managers of the external partners. The only statistical difference in the mean significant at α -level of 10%, can be found for the value driver of strategic interdependence. This first analysis indicates that there is hardly any difference between the two samples thus already hinting at the non-existence of a perception gap. However, this test does not show if differences in perceptions about a partnership are related to the lower or higher performance of a partnership.

<i>Subjective Measures as Independent Variables</i>					
	Dependent Variables	Rev1	Rev2	Rev3	REV
HC	Adj. R ²	0.18	0.04	0.01	0.13
	F statistic	2.77**	1.34	1.05	2.24*
	beta coefficient	0.21	0.09	0.09	0.15
CC	Adj. R ²	0.26	0.10	0.09	0.24
	F statistic	3.96**	1.88	1.78	3.58***
	beta coefficient	0.37***	0.26*	0.30**	0.37***
SC	Adj. R ²	0.17	0.15	0.09	0.22
	F statistic	2.75**	2.46**	1.83	3.32***
	beta coefficient	0.20	0.34**	0.30**	0.33**
IC	Adj. R ²	0.25	0.12	0.09	0.25
	F statistic	3.83***	2.18*	1.85	3.78***
	beta coefficient	0.36**	0.32**	0.32**	0.39***
<i>Objective Measures as Independent Variables</i>					
HC	Adj. R ²				0.11
(Objective)	F statistic				1.99*
	beta coefficient				-0.27
SC	Adj. R ²				0.11
(Objective)	F statistic				1.98*
	beta coefficient				0.01

Note: Significance levels are indicated as: * 0.1, ** 0.05, *** 0.01

Table 4. Link between intangible and tangible performance (Hypothesis 3)

	Independent Variables	CC	SC
HC	R ²		47.6
	F statistic		1.8
	beta coefficient	0.19	0.23
	Independent Variables	HC	SC
CC	R ²		54.2
	F statistic		2.55**
	beta coefficient	0.17	0.31**
	Independent Variables	HC	CC
SC	R ²		51.9
	F statistic		2.26**
	beta coefficient	0.21	0.32**

Note: Significance levels are indicated as: * 0.1, ** 0.05, *** 0.01

Table 5. Link between intangible performance measures

Therefore, a new set of variables was constructed by subtracting the scores of the external partner managers from the focal company managers. According to this measure, the matched observations are ranked and divided in an upper and lower half which is intended to proxy for high and low alliance performance. In a final step, an independent-samples t-test compared the mean of the value drivers of the high and low performance partnerships. This test did not provide any significant results for the value drivers.

7. Discussion of results

Figure 1 summarizes the findings for the scaled performance measures for H1, H2, and H3 by indicating the beta-coefficients and the significance of the results. The seven propositions of hypothesis 1 show significant results for the value drivers of open communication, strategic interdependence, participation and coordination of work. The

relationship between the seven value drivers and tangible performance represented by hypotheses 2 show more significant results. All hypotheses, with the exception of symmetry, are significant.

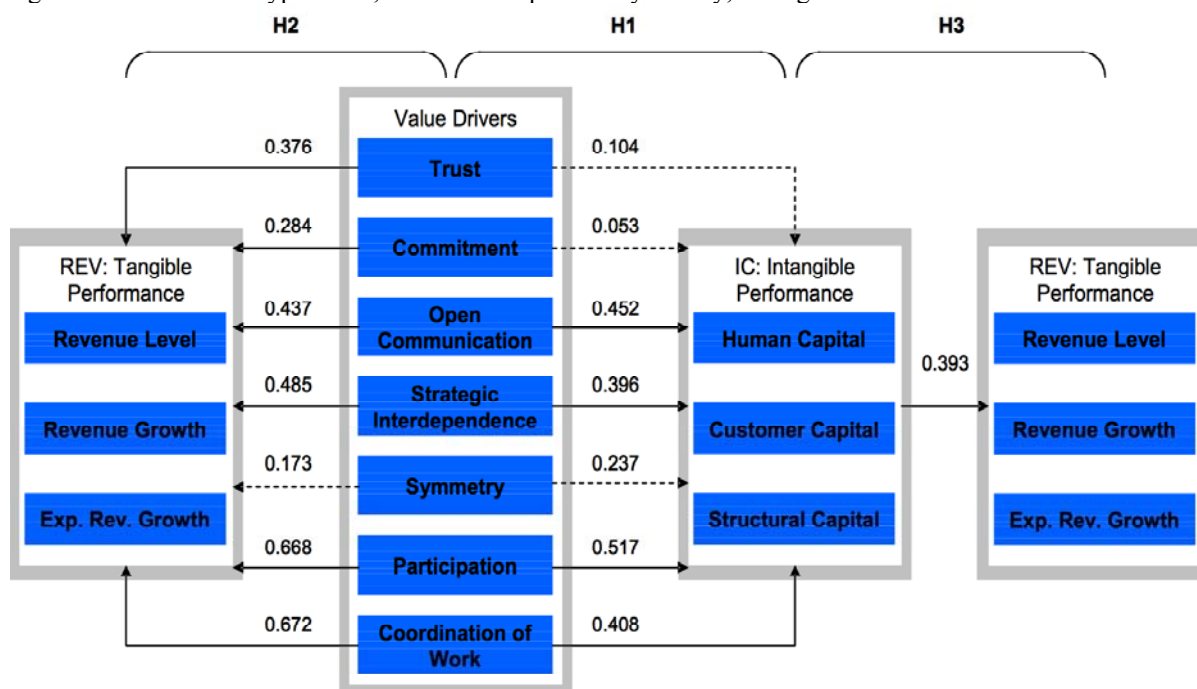


Figure 2. Summary of results of scaled performance variables

(Dashed lines not significant at 0.05)

For each hypothesis it is important to note that the regression results only indicate the correlation between variables. They do not provide proof of cause and effect relationships. Yet, based on the thorough hypothesis development in the fourth section of this paper, theoretical concepts do offer arguments for a specific cause and effect relationship. Therefore, the assumed relationship can be supported or neglected with the evidence of the regression results and the below discussion of the results.

H1/2a indicate mixed results for the relationship between trust and performance. The majority of trust-related research finds a positive relationship between trust and tangible performance (e.g. Mohr & Spekman (1994) and Kauser & Shaw (2004)), which is confirmed by this study. Trust can lower transaction costs in the situation of incomplete contracting and, consequently, lead to higher performance. Further, according to game theory, trust will generate higher payoffs for the participants in a multi-period game theory setting. As the interactions in dyadic sales alliances clearly have the characteristics of a game, higher trust leads to higher tangible performance. However, the relationship between trust and intangible performance is much less clear, also because little research has been performed in this field. As already mentioned, trust is a highly complex construct, effective at different dimensions. Therefore, more research relating different dimensions of trust to IC measures is suggested for the future.

Results for H1/2b are in line with several existing research studies that jointly discuss trust and commitment and point out their strong relationships (Andersson & Weitz, 1992; Cullen et al., 2000; Hadjikhani & Thilenius, 2005), commitment shows similar results as trust. That is, H1b is supported although H1b does not find a significant relationship to IC. Thus, commitment seems to have an overall impact on dyadic partnerships. Like trust, it sets the tone of the interaction and is of fundamental importance. Yet, the relevance for the relationship to the more specific IC components is not significant.

Hypotheses H1/2c regarding open communication display a strongly significant relation. We conclude that open communication generates higher performance in two ways. The first way concerns knowledge sharing. Open communication implies the willingness but also the ability to share information (Inkpen & Birkenshaw, 1994). Increased communication is essential for preventing misunderstandings as well as to engage in joint planning. The efficiency and success of a partnership strongly depends on setting joint goals that, in turn, is based on relevant information input from both sides of the partnership (Kauser & Shaw, 2004). Overall, in contrast to trust and commitment, open communication benefits an alliance by showing specific positive impacts of these value drivers, which are important for tangible performance as well as individual components of IC.

Strategic interdependence (H1/2d) is expected to positively affect IC measures and tangible performance. The hypotheses are strongly supported, contradicting Mohr & Spekman (1994) and indicating that their construct of interdependence captures different types of dependence such as, e.g., total interdependence and asymmetric interdependence. This study employs Kumar's (1995) definition in its individual elements and

consequently makes use of two separate hypotheses for two definitions. Additionally, the contradictory results of this study may be further explained by the specific research setting of dyadic sales alliances in the software sales industry. The focal company provides the software and licenses but is, apart from the promotion aspect, not at all involved in the sales activities. Conversely, the partners of the focal company are completely uninvolved in the software development activities of the focal company. Their singular task is to sell the software and provide after-sale services. In other words, this clear separation of activities in the value chain shows the major role of strategic interdependence in this study. As a matter of fact, this situation provides a perfect illustration of the resource-based view where two different companies have different capabilities and combine their resources to maximize their performance.

As explained above, Kumar et al. (1995) define the value driver of symmetry as asymmetric interdependence. Anderson & Weitz (1989) and Spekman et al. (2000) point out symmetry to be of importance for alliance success. The study by Kauser & Shaw (2004) empirically confirms a positive relationship between symmetry and alliance performance. According to the equity theory of motivation, the notion of fair dealing is expected to increase alliance success. However, this expectation can not be confirmed as based on the non-significant regression results for the hypotheses H1/2e. The reasons why the hypotheses are not supported are difficult to determine. One possible explanation might be the low Cronbach's alpha value of 0.542 for the construct of symmetry in this study. The low reliability might harm internal validity, thus arguing for insignificant results. Another argument might be that it is possible that the employed theory is not strong enough. For example, one aspect of the equity theory of motivation is that partners want to be treated equally even if this would cause a lower alliance performance. This behavior assumes that all partners behave irrational since they would prefer the feeling of equality to higher performance. In addition, the model assumes equality to be the only motivation basis which is obviously not realistic. Consequently, it might be worthwhile to explore alternative potential theoretical perspectives in order to establish a relationship between symmetry and alliance performance.

Hypotheses H1/2f relate the value driver of participation to intangible and tangible performance measures. The results for both hypotheses are highly significant and support the proposed positive relationships. The outcome confirms findings by Discoll (1978) and Saxton (1997). Higher participation signals higher interest in the partnership and makes monitoring much easier, which lowers the risk of opportunistic behavior as suggested by game theory. Further, participation in planning activities increases knowledge sharing, which benefits alliance from a learning perspective. Yet another positive aspect of participation is the potentially stronger motivation as both partners are involved in the decision-making process and can discuss potential disagreements before they arise.

The final value driver of coordination of work is hypothesized to be positively related to performance. Hypotheses 1/2g are highly significant and display the relevance of coordination of work. Coordination of work is seen to be an essential driver of alliance success (Elmuti & Kathawala, 2001). The higher the degree of coordination of work, the more firms are considered as integrated. The extent of integration can thereby range from frequent meetings to integrated information systems. Increased coordination can be achieved by means of a better information flow, improved planning and feedback systems, and, especially, better combination of resources, all of which increase alliance performance. It is important to note that coordination of work is essential for IC components. More coordination, which implies closer integration, can enable more knowledge sharing leading to higher human capital. Additionally, a more effective coordination between promotion activities of the focal company and sales efforts of the partners can increase customer capital. Further, coordination of work is for a main ingredient of structural capital as this IC component focuses at organizational processes and systems, which in turn determine the degree of integration.

In addition to the regression results discussed so far (of the scaled variables of IC and revenue), there are some striking results when looking at the relationships between individual IC components and tangible performance measures. When regressing the value drivers on the individual IC components, the first striking difference can be found in the significance for hypotheses 1. The results for structural capital are of much stronger significance in terms of R^2 and beta-coefficients in comparison to the results for human and customer capital. To our knowledge, similar results cannot be found in existing academic IC research literature. A possible explanation might be that structural capital, e.g., communication systems, quality control, or joint databases, is more visible for the partners surveyed in this empirical study. In contrast, human capital (e.g., the knowledge of the partners) and customer capital (e.g., the knowledge about the customers) are more difficult to capture and imagine and might, therefore, not be as visible for the survey participants. Clearly, the method of asking participants about their perception might provide partly biased results. The second striking results are the significant beta-coefficients of the value drivers of commitment and of symmetry for their relationship to the third tangible performance measure (expected revenue growth), in contrast to the two insignificant revenue measures of the (existing) level of revenue and of (existing) revenue growth. The reason why commitment is positively related to only the future-orientated revenue measure might be due to the signaling effect of commitment. Higher commitment implies that the partnership is of high value for the partners. Furthermore, higher commitment signals that the alliance partner is willing to put more effort into the alliance, which should translate at a later stage into higher performance. Thus, commitment can be described as a more forward-looking variable that takes time to materialize. The same line of argument might be valid for the closely related variable

of trust. Indeed, trust is highly significant when regressed on the expected revenue growth measure and not significant for the existing revenue growth one. However, the current level of sales revenue measure is also significant. This outcome reduces the relevance of the argument that commitment and trust might impact alliance success as general value drivers with a longer time horizon as compared to the other value drivers that are of a more operational nature, such as communication and joint planning. Overall, the question of how long it takes before a value driver positively impacts performance is a related interesting question, requiring a longitudinal research design. The differences in significant values for the value driver of symmetry are more difficult to explain. In this respect, the low value of the Cronbach's alpha test will need to be taken into consideration; the low reliability can lead to regression results deviating from the true values, which can potentially lead to wrong interpretations.

The third hypothesis (H3) focuses on the relation between intangible and tangible performance. In accordance with preceding studies (Bontis, 1998; Bollen et al., 2005; Moeller, 2006), our paper suggests a positive relationship between intangible performance and revenue measures. Academic research by Ittner et al. (2003) and Lipe & Saltario (2000) report a similar positive relationship of leading intangible factors to lagging tangible metrics. Based on this paper, hypothesis 3 suggests a cause and effect relationship and shows significant statistics. As a result, it can be empirically supported that IC components positively affect tangible performance. This result is considered of high relevance for today's business management. Companies only concentrating on the final financial results oversee the underlying factors responsible for these results, which are mainly intangible. Maximizing the intangible performance is a strategy to exploit the full profit potential of a firm and to build a competitive advantage. As Bontis (1998) suggests, the measurement and management of IC has thereby several advantages and applications. At an initial stage, it supports strategy formulation and can assist in assessing strategy execution. Other benefits are that intangible measures provide a basis for compensating employees and communicating with external stakeholders. Further, IC measures can provide additional information for diversification and expansion decisions as well as, conversely, for focus and contraction/restructuring decisions. However, the relevance of the three individual IC components varies. Human capital does not show any significant relationship to any one of the four revenue measures. In contrast, customer capital and structural capital do show consistent significant relationships. This finding confirms the study by Bontis (1998), who finds that the relationship of the three IC measures to tangible performance is strongest for customer and structural capital. According to Bontis (1998, p. 65), human capital is the "*sheer intelligence of the organizational member*", which can only be leveraged with the appropriate customer and structural capital. This implies a less significant relationship of human capital to tangible performance, which is also confirmed by the regression results.

The fourth area of investigation, regarded the interrelationships between the three IC components. The aim of this analysis was to verify the implicit assumption of the research framework used in this paper to not assume any relationships between IC measures. Bollen et al. (2005) find a very high significance for the adj. R^2 , but only weakly significant beta-coefficient at α -levels of 10%, when performing three regressions with one IC component as dependent variable and two as independent variables. In contrast, Bontis (1998) finds only a significant beta-coefficient for the relationships between human capital and customer as well as structural capital, but no relation between customer and structural capital. Yet, our study shows only one significant relationship and that is between customer and structural capital. The three different outcomes of these three studies provide a mixed and unclear picture of the relationships between the different IC components. The implications for this study are that the simplistic model assuming no inter-relations suits best to the research setting. In general, it can be concluded that the relationships are more complex than expected and probably depend on the research setting. As there is still a lack of research about the relationships between IC components, this definitely provides a fruitful avenue for further investigation.

The interpretation of the results of a possible perception gap is discussed as a fifth topic of interest. With the exception of strategic interdependence, an independent-samples t-test indicates that there are no differences between the sample means. These results imply that, on average, there exists no perception gap. The only significant value for the strategic interdependence variable can be explained by the research design, in which managers of a big international software firm are compared with smaller partner firms. Intuitively, a difference for this variable is expected as the big focal company definitely depends less on its smaller partners than vice versa. However, the second analysis shows more significant results. Several significant correlations were found between the differences of value drivers and differences in intangible and tangible performance measures. These results indicate that a partner firm's manager who gives a relatively lower score for value drivers in comparison to his counterpart, also perceives the partnership to be less successful than the partner manager of the focal firm. Thus, these results confirm the main finding of this paper that value drivers and alliance performance measures are related. The third test investigated the relationship between differences in perceptions of value drivers and tangible alliance performance, which is not significant.

Overall, these tests suffered from the small sample size and are, therefore, not fully reliable. However, it is still possible to extract certain implications. For one, there seems to be no perception gap between the focal company partners and the external partner managers. Looking more specifically, a relationship between differences in the perception of value drivers and the level of tangible performance cannot be found. However, the basic positive

relationship between value drivers and alliance performance persists despite of existing differences in perceptions of the two sides of the alliance.

8. Conclusion and managerial implications

Partnerships and alliances have become an important strategic choice in today's business environment. The tremendous growth in the number of alliances in the business world comes with a simultaneous growth in the alliance literature in the research world. In recent years, alliance research has focused on behavioral characteristics of business partnerships as key success factors. Managing these softer factors is seen as a key to lower the reported high failure rates and maximize alliances performance. In order to analyze business partnerships and alliances, two surveys were conducted. The main one was conducted with business partners of a big international software company (the focal company) in Belgium and Luxembourg, whereas the second survey was addressed at the partner managers within the focal company. The research study develops hypotheses that enable the validation of cause and effect relations between alliance value drivers (behavioral characteristics) and alliance success (tangible and intangible performance variables).

This paper contributes to the field of alliance research by extending and testing the research framework of Moeller (2006) in a specific research setting. Singularly relating behavioral value drivers to financial performance of alliances ignores intangible performance components. This research shows that behavioral value drivers directly affect alliance performance and, additionally, indirectly affect intangible performance. The direct relationship to tangible performance is found to be positively significant for six value drivers: trust, commitment, open communication, strategic interdependence, participation, and coordination of work. The only variable not being significant is the one of symmetry. The indirect relationship by means of intangible performance shows a positive effect of the value drivers of open communication, strategic interdependence, participation, and coordination of work. Overall, symmetry does not have any impact on performance. The closely related drivers of trust and of commitment are important for the overall performance of business partnerships but do not increase the performance of specific intangible components. The inter-relationships between the intangible components of IC display an interesting field of future research, as the results of this study are not confirming the few empirical findings of the recent years. Deeper understanding of these interrelations will benefit managing alliances in order to maximize their performance. However, what can be confirmed based on this study is that IC components are leading indicators of alliance success.

The managerial implications resulting from these findings are that, if managers want to fully exploit the potential of business partnerships, they will have to consider intangible performance in terms of human, customer, and structural capital. Thereby, human capital can be increased by fostering interaction between partnerships. More communication and participation can be used to increase knowledge sharing and experience exchanges as well as to raise motivation. Frequent meetings, knowledge training and feedback sessions are essential ways to boost human capital. Customer capital focuses in this respect on customer orientation and satisfaction. In the partnerships studied, the activities of the value chain are separated and performed by different business partners. In order to achieve a high level of customer satisfaction both partners have to work closely with each other. For example, feedback rounds can be introduced to discuss the customer needs while, based on this feedback, the focal company can adapt the design and features of its software and its promotion activities, which in a third step would need to be communicated to the sales partner. Hence, strategic interdependence and the willingness to cooperate are, apart from communication and participation, important elements to maximize customer capital. The last component of IC is structural capital which is strongly influenced by the degree of coordination of work. For example, integrated systems of knowledge sharing and communication between partners simplify the coordination of work and ease the exchange of ideas, provide feedback, or ask for advice. The second survey of this paper tries to gain additional and initial insight into dyadic perceptions about a partnership from the perspective of both the alliance counterparts simultaneously. The examination of a perception gap and its influence on alliance performance are expected to have beneficial implications for partnership managers. Thereby, feedback systems are potential ways to lower perception gaps. Overall, this study points out the important drivers of alliance success. These drivers, directly and indirectly through IC components, influence alliance outcomes.

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