Strategic implications for (non-equity) alliance performance

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ABSTRACT

Based on data from two separate cross-industry samples, we offer empirical support for a theoretic framework that explains an important set of antecedents to alliance performance. Our findings suggest that capability complementarity and investment in the alliance—via their influence on the development of competitive capabilities—as well as implementation effort, are important elements that ultimately affect the success of the partnership. Furthermore, our findings confirm that it is not only the generation of quasi-rents but the generation of Schumpeterian rents that have an impact on performance in non-equity alliances. This is seen in the relationship between alliance performance and the capacity of the alliance to change and innovate in a strategically flexible manner.

Keywords:

alliance; performance; capabilities; resource based view; partial least square modeling

INTRODUCTION

As organizations downsize and focus more on what they perceive to be their core capabilities, the number and intensity of their external business partnerships and alliances increases dramatically (Andersen Consulting, 1999; Harbison and Pekár, 1998; Holmberg and Cummings, 2009). The vast majority of these alliances and partnerships are of the non-equity holding variety; with airline alliances such as Star Alliance and One World as the most noticeable of such an arrangement. The scale and importance of the non-equity variety of alliance is seen in Colombo (2003) and Duysters et al. (1999) who reveal that 60–85% of all alliances are non-equity agreements. These partnerships have become a central approach for implementing corporate and business strategies that are aimed at growing turnover, strengthening innovativeness and establishing a basis for future growth (Holmberg and Cummings, 2009).

The establishment of new alliances is considered by many CEOs as one of the main vehicles for growing their business (PWC, 2011). According to PWC, 39% of CEOs expect that the majority of their innovations will be co-developed with partners outside their organization, implying that alliances are a crucial element for initiating innovations and enhancing firm performance. However, alliances are not always a guaranteed pathway to strategic success. Alliance failure rates are reported to range from 30–70%, indicating that the benefits accruing from alliances are, in reality, difficult to realize (Kaplan and Rugelsjoen, 2010).

Despite this increase in both the volume and strategic importance of non-equity partnerships we can benefit from a better understanding about what differentiates the superior from the weaker performing alliances. Although this is true both for equity and non-equity partnerships, it is particularly the case for non-equity alliances, which lack the control function of ownership seen in equity alliances (Globerman and Nielsen, 2007; Gudergan et al., 2002; Gulati, 1995). The

extant literature is short of empirical studies that unequivocally focus on performance aspects of non-equity-governed business partnerships. This is notwithstanding the insights generated in more recent years (Colombo, 2003; Liu et al., 2010; Lunnan and Haugland, 2008; Sampson, 2007). Hence, our principal concern is to address the question *"why is the strategic performance of some non-equity alliances better than others?"* In doing so, we aim to fill a void in our understanding of the factors that influence the strategic performance of the vast majority of under-researched interorganizational cooperative arrangements.

The academic literature has long argued that the distinguishing feature of better performing alliances resides in their ability to leverage the pooled resources of the partners (Chang and Hong, 2000; Combs and Ketchen, 1999; Devlin and Bleackley, 1988; Harrison et al., 2001; Madhok and Tallmann, 1998; Yadong, 2008). Empirical studies concentrate very much on the rents created through this synergistic interaction of pooled resources (i.e., quasi or Ricardian rents) in explaining differences in alliance performance; placing less notice on Schumpeterian rents.[1] Despite some recent advances (Fang, 2011; Kale et al., 2000; Liu et al., 2010; Stuart, 2000) there is only casual understanding of the means by which alliance performance is enhanced by the extent to which these pooled resources are employed in innovative and entrepreneurial ways (Madhok and Tallmann, 1998). In line with more recent thinking, we argue that Schumpeterian rents generated through this innovative and entrepreneurial application of the alliance's pooled resources plays an equally important role in driving alliance performance. We contend that integrating these perspectives is essential to gaining deeper insights into the performance implications of non-equity interorganizational collaborations (Lunnan and Haugland, 2008).

[1] Whereas the former originate from the scarcity and value of the resources and capabilities (Klein et al., 1978) that are unique and cannot readily be replicated (Penrose, 1959), Schumpeterian rents stem from risky initiatives and entrepreneurial insights leading to innovations rendered by (new) combinations of resources and capabilities (Amit and Zott, 2001).

By specifically examining these different types of rents we show that performance is enhanced not just through the use and leverage of resources but via the innovation and flexibility occurring endogenously in the alliance, i.e., by capturing Ricardian and Schumpeterian rents. The analytical procedure for empirically assessing this approach is an application of partial least squares path modeling (PLS-PM). In what follows, we present the theoretic basis for our argument, outline an empirically testable model, and test this model on two samples of Australian firms. We conclude by discussing our results and the implications of this work for research and theory on non-equity alliances, and for successfully managing non-equity business partnerships.

THEORETIC BACKGROUND

Despite their commercial importance, there remains a paucity of academic literature specific to non-equity partnerships, particularly when one compares this to the voluminous amount of research on equity-based alliances. Although a myriad literature has addressed major organizational and strategic theories dealing with the performance of equity-based alliances, a comprehensive theoretic framework of both equity and non-equity alliance performance has not yet emerged. There is a diversity of conceptual frameworks pertaining to equity alliances—for an overview, see Hoffmann and Schlosser (2001), Swoboda et al. (2011), and Parmigiani and Rivera-Santos (2011)—some of which are also relevant to non-equity alliances. The resource-based view (RBV) is the most commonly employed theoretic basis and assumes that alliances arise when firms require additional resources (often referred to as complementary resources) that cannot be easily purchased or efficiently built-up internally (Chang and Hong, 2000; Combs and Ketchen, 1999; Devlin and Bleackley, 1988; Harrison et al., 2001;Yadong, 2008).

The RBV is often complemented with other theoretic approaches, such as transaction cost economics (assuming the establishment of alliances as a transaction cost minimizing organiza-

tional model), or social exchange and capital approaches (which focus on inter-firm collaboration—for instance as a means of enhancing legitimacy—in terms of interorganizational trust, and with reference to the impact of social positioning). For example, Peng and York (2001) integrate transaction costs and agency theoretic thinking with the RBV; Lavie (2006) and Lin et al. (2009) combine it with social exchange theory, and Liu et al. (2010) refer to relational and learning aspects. Applications of the social exchange or social capital perspectives (Chung et al., 2000; Gulati et al., 2009; Koka and Prescott, 2002; Robson et al., 2008) and knowledge-based thinking—which conceptualizes alliances as an ideal means of creating value by combining knowledge, especially in terms of learning (Kale et al., 2000; Larsson et al., 1998; Lyles, 1988; Nielsen and Nielsen, 2009) are similarly prominent. Finally, authors such as Fang (2011) and Stuart (2000) emphasize the role of innovation in influencing alliance performance.

What this breadth of work reveals is the need to integrate, in a considered fashion, diverse theoretic approaches when attempting to understand the determinants of alliance success. This is what we will do here. From our perspective, the RBV provides a valuable starting point in that it views organizations as creating and replacing rent-generating resources. This, in turn, puts emphasis on acquiring the (complementary) resources needed to enhance a firm's competitive position in the market. However, a weakness of the RBV—as it has been commonly applied in the alliance literature—is its great reliance on equity as the dominant mechanism for control and incentive alignment; something that is de facto ruled out in non-equity alliances. This implies a need to go beyond the RBV to find a more generalizable control structure when examining non-equity alliances.

Madhok and Tallmann (1998) provide insight into the formation, management and instability of alliances, and offer a possible explanation of strategic performance of such collaborative

arrangements. Building upon Teece's work (Teece and Pisano, 1994; Teece et al., 1997) and the logic expressed by Zajac and Olsen (1993) they present three arguments that have implications for non-equity alliances: (*a*) alliances can generate value (i.e., enhance strategic performance) through quasi-rents originating from the potential synergies arising through the combination of complementary resources and capabilities; (*b*) the value created in an alliance can be improved through quasi-rents stemming from the effort the partners expend to realize the actual value from this synergetic resource base (i.e., to leverage the combined resources and capabilities); and (*c*) alliance value can be enhanced "through entrepreneurial […] actions" geared towards "ongoing modifications to adapt to new conditions and skill requirements" (Madhok and Tallmann, 1998). Thus, they explain alliance performance as a function of quasi-, or Ricardian, rents. Although they hint at the role that entrepreneurship plays in such ventures, this latter aspect requires further development (Lunnan and Haugland, 2008).

That alliance performance is influenced by activities of an entrepreneurial nature is in line with the conceptual and practical understanding that alliances are often formed to facilitate innovations (Greis et al., 1995; Pisano, 1991; Pitsis and Gudergan, 2010). This is supported by empirical evidence (Li and Atuahene-Gima, 2001; Sarkar et al., 2001; Stuart, 2000) and conceptual arguments (Chaney et al., 1991; Mahoney and Weitzel, 1969; Mansfield, 1968) that link innovation to alliance performance. Associated Schumpeterian rents affect the performance of collaborative ventures, and they, and their sources, need to be considered when attempting to build a model of alliance performance.

Madhok and Tallmann's (1998) work provides a foundation on which we can build a deeper understanding of the strategic performance of non-equity governed alliances. Yet, it is incomplete, and unable to form the sole basis of our model as it falls short of providing a theoretical

framework that incorporates the role of Schumpeterian rents to explain the performance of non-equity partnerships. While resource configurations matter, particularly in static markets, in moderately dynamic markets strategic performance is determined by both leveraging resources and change, whereas in high-velocity markets the strategic imperative is change and not leverage (Eisenhardt and Martin, 2000). Change routines or corresponding reconfiguration processes are typically termed dynamic capabilities and are usually the source of Schumpeterian rents (Teece et al., 1997); please also see Wilden et al. (2012) in this special issue. Unlike Ricardian rents—which can be competed away—Schumpeterian rents can be sustained so long as dynamic capabilities are maintained. This process is based on the ability to seek novel resource combinations focusing on learning and operating in "creative ways" (Teece, 2003). This thinking is confirmed, at least partially, by general empirical findings relating to learning in strategic alliances (Lane and Lubatkin, 1998; Lane et al., 2001) and specific work addressing the roles of routines, creativity, and learning (Reuer et al., 2002; Zollo et al., 2002).

In conclusion, we argue that although existing research provides a basis on which to build an understanding of non-equity alliance performance—in particular the work of Madhok and Tallmann (1998)—the work is incomplete. This is due, in part, to the failure to emphasize the performance aspects in the vast majority of alliances where the partners have no equity. That is, in non-equity alliances, the generation of quasi-rents stemming from the effort the partners expend to realize the actual value from a possibly synergetic resource base is, given the lack of control over partners, problematic. In this sense, the literature does not have a comprehensive theoretic framework explaining the strategic performance of alliances because the totality of the domain has yet to be studied. This paper provides a more exhaustive understanding of the drivers of performance in non-equity alliances by bringing together previously dispersed concepts. Our

first contribution is in the conceptualization of strategic performance of non-equity alliances as the realization of value originating from two sources: the value created from a competitive resource base contributed by the alliance partners and from their effort in leveraging this resource base (i.e., quasi-rents), and the value created from the innovativeness and adaptability of the alliance (i.e., Schumpeterian rents). Our second contribution follows from the yet insufficient attention paid to the intricacies of non-equity alliances, and still limited explicit empirical examination of this particular type of partnership—an issue that we will address in this paper.

A MODEL OF (NON-EQUITY) ALLIANCE PERFORMANCE

In this section we introduce a model of non-equity alliance performance, defined as the extent to which the alliance has realized its strategic objectives and created value. The proposed model is presented in Figure 1, and Table 1 contains the names and definitions of the model's constructs. The model integrates the constructs of *creativity*, *learning, innovation,* and *adaptability*, into an overarching theory of *partnership performance*. We argue that the performance of non-equity governed alliances is driven not only by raw inputs of its partners but also by the innovativeness and adaptability of the alliance. *Alliance competitive capabilities* and the amount of *effort* expended by the partners reflect the raw inputs to the alliance.

Insert Figure 1 here

There are three main components of the model:

1) *Alliance performance* is driven by the *competitive alliance capabilities,* each partner's *implementation effort, effort adaptability*, and *alliance innovation*. While *competitive alliance capabilities* and *each partner's implementation effort* lead to the leverage of the resource base available to the alliance—and, hence, to the generation of quasi-rents—*effort adaptability* and *alliance innovation* underlie the Schumpeterian rents.

2) *Competitive alliance capabilities* are in turn affected by the *complementarity* of capabilities dedicated by the partners to the alliance and their overall *investment in the alliance*.
3) *Alliance innovation* is influenced by the extent to which *creativity* and *learning* occur within the alliance, as well as by the *competitive capabilities* residing in the alliance.

Insert Table 1 here

This conceptualization brings together previously dispersed constructs in a more extensive and theoretically-based model so that to provide a basis for empirically examining the role of these constructs in explaining *alliance performance* in non-equity alliances.

HYPOTHESES

Competitive Capabilities in Non-Equity Alliances

Organizations that aim to accomplish specified strategic and operational objectives, but do not possess all the necessary capabilities to be successful, may form relationships with independent organizations. These alliances attempt to generate joint capabilities through combining resources in order to improve their competitive capabilities and positioning. The extent to which each partner's competencies supplement the other's in a sequential and/or intertwined manner affects the creation of sustainable and unique alliance capabilities needed to compete effectively in the relevant markets (Das and Teng, 2000; Harrison et al., 1991; Harrison et al., 2001; Lin et al., 2009). It is not the set of resources but, rather, their distinctive and purposeful combination into capabilities that is not only valuable to the organization but can also be unique and/or difficult to imitate. The extent to which a combination of resources has the potential to be distinctive and purposeful determines the level of complementarity. Hence, we refer to *capability complementarity* as the extent to which the partner's capabilities supplement one another's and overall

competitive alliance capabilities as an alliance's resulting capacity to compete in its target market(s). Notwithstanding potentially lower coordination effectiveness in non-equity alliances, we argue that *capability complementarity* is a positive predictor of *competitive alliance capabilities*.

Hypothesis 1: *Greater capability complementarity leads to greater competitive alliance capabilities.*

Value creation through collaborative partnerships is possible when partners undertake investments in the collaborative venture to create unique configurations of resources (Dyer, 1996; Hamel, 1991; Murray and Kotabe, 2005). Thus, investment in the alliance facilitates the development of overall competitive alliance capabilities. The emphasis here is on the combined investment (in assets, procedures, and processes) made by all partners. These investments contribute to the set of resources available to the alliance and are assumed to have a higher value inside the alliance than outside. Yet, from an ownership perspective, they reside within the partnering organizations and not the alliance. Hence, we argue that alliance investments improve the competitive capabilities within the alliance.

Hypothesis 2: *Greater alliance investment leads to greater competitive alliance capabilities.*

Innovation in Non-Equity Alliances

The classic definition of innovation outlined by Thompson (1965)—the generation, acceptance, and implementation of new ideas, processes, products, or services—overlaps with the concepts of organizational learning and creativity. Other authors differentiate more strongly between innovation and its possible explanatory constructs by referring to innovation as the final implementation process of a(n) (creative) idea, practice or material artifact (Amabile et al., 1996; Zaltman et al., 1973). We recognize the uniqueness of the three constructs of learning, creativity, and innovation. Following Huber (1991), we define *organizational learning* as the development

of knowledge or insights. *Creativity* is the process of generating novel ideas, as opposed to *innovation* as the sifting, refining, and—most critically—the implementation of those ideas (Amabile, 1988; Bucic and Gudergan, 2004; Kanter, 1983). A distinction among the three constructs is implicit in the argument by Mumford and Gustafson (1988) suggesting that organizational innovation is positively affected by creativity and learning in organizations. This assumption also finds empirical support in studies reporting correlational evidence on the relationship between creativity and innovation (Abbey and Dickson, 1983; Paolillo and Brown, 1978). For example, Soo et al. (2002) show that creativity-in-decision-making is strongly related to organizational innovation. Hence, we argue that creativity is an antecedent to innovation and define *alliance creativity* as the process of generating novel ideas within an alliance, and *alliance innovation* as the sifting, refining, and implementation of these novel ideas.

Hypothesis 3: *Greater alliance creativity leads to greater alliance innovation.*

Learning within organizations has been a feature of the theory of the firm since Cyert and March (1963) and, like creativity, it plays a central role in an organization's capacity to innovate (Chen et al., 2009; Teece et al., 1997). Moreover, learning is one of the common motivations for forming strategic alliances and contributes significantly to alliance outcomes, such as, innovation (Dong and Glaister, 2006; Inkpen and Beamish, 1997).

Increasingly, the relationship between learning and innovation has been examined at both a strategic (Dodgson, 1991; Nielsen and Gudergan, 2012; Schweitzer and Gudergan, 2010; Zhang et al., 2010) and tactical management level (Imai et al., 1985; Maidique and Zirger, 1985), and the idea of learning becomes increasingly prominent in researching performance (Emden et al., 2005; Kale and Singh, 2007; Liu et al., 2010).

According to conceptual (Stata, 1989; Teece et al., 1997; Tushman and Nadler, 1986), em-

pirical (Cohen and Levinthal, 1990; Henderson and Clark, 1990; Kenney and Gudergan, 2006; Sivakumar et al., 2011) and simulation research (Mezias and Glynn, 1993), both an organization's overall capacity to learn from its own history and experiences, as well as its competitive capabilities, enhance organizational innovation; please also see Berghman et al. (2012) in this issue. An organization's competitive capabilities (i.e., valuable and competitive resources, skills, etc.) provide a foundation for innovation to flourish. Learning complements this basis where *alliance learning* reflects the development of knowledge or insights that influence behavior within the alliance. We, therefore, argue that both the capabilities within an alliance, as well as learning, are of relevance for the innovativeness of the partnership, and offer the following two hypotheses:

Hypothesis 4: *Greater alliance learning leads to greater alliance innovation.*

Hypothesis 5: *Greater competitive alliance capabilities lead to greater alliance innovation.*

Non-Equity Alliance Performance

Having defined the relationships associated with intermediate outcomes (competitive capabilities and innovation), we turn to our dependent construct: the fulfillment of alliance objectives and value creation, namely, *alliance performance*. A defining characteristic of the RBV is the emphasis upon resources as a fundamental determinant of organizational performance (Rumelt et al., 1991). Differences in resource endowments are causally related to differences in organizational performance (Conner, 1991). Building upon this logic, we extend the work of Madhok and Tallmann (1998) and argue that the extent to which an alliance develops unique capabilities that provide the foundation for a competitive advantage determines whether specified alliance objectives are likely to be met and value created; please also see Lew and Sinkovics (2012) in this issue. Thus, in leaning on the works concerning strategic performance, in general

(Hamel and Prahalad, 1990; Sinkula, 1994; Stalk et al., 1992), we propose that competitive alliance capabilities are a predictor of an alliance's overall performance.

Hypothesis 6: *Greater competitive alliance capabilities lead to greater alliance performance.*

Furthermore, the extent to which partners expend effort in performing their envisaged functional roles is essential to value creation in any organization or cross-organizational arrangement. The striving of all partners in an alliance to execute relevant elements of the business strategy and to make appropriate use of the competitive alliance capabilities is consequentially captured in what we term *alliance implementation effort* and included in our model. This effort is reflected in behaviors encompassing elements of completeness (i.e., partners do contribute all required tasks), accuracy (i.e., they provide their effort appropriately), quantity (i.e., they dedicate the necessary amount of effort), utilization of available capabilities (i.e., they leverage the pooled capabilities residing in the alliance) and coordination (i.e., they harmonize their efforts); please also see Furrer et al. (2012) in this special issue. Both partners' combined efforts affect the level to which specified alliance objectives are achieved and value is created. In our study of non-equity alliances, this implementation effort as a predictor of performance is of special interest in light of the lacking inherent control function assigned to equity-based arrangements.

Hypothesis 7: *Greater alliance implementation effort leads to greater alliance performance.*

Innovation (both process and product) is important for developing a competitive advantage (Franko, 1989; Porter, 1990). As a consequence, the performance of organizations is based, at least partially, on their ability to develop successful product and process innovations. This, in turn, can provide an early-mover advantage that may result in improved market share and performance of innovating firms (Carpenter and Nakamoto, 1989; Lieberman and Montgomery, 1998; Robinson and Fornell, 1985). The empirical link between innovation and performance is

unequivocally positive (Chaney et al., 1991; Geroski and Machin, 1992; Geroski et al., 1993; Mansfield, 1968) and recognized by CEOs around the globe. As Johannes Teyssen, Chairman and CEO of German energy corporation E.ON AG, states: "[we] realise that our future success really hinges on our ability to innovate and mobilise new technology" (PWC, 2011, p. 9). In the same vein as Stuart (2000), we argue that innovation is of equal relevance in alliances and that it leads to greater performance.

Hypothesis 8: *Greater alliance innovation leads to greater alliance performance.*

Having outlined that the partners' efforts in performing their envisaged functional roles is essential for good performance, we further extend this argument and draw on Henderson (1983) in suggesting that organizations are required to adapt their efforts to compete in changing, competitively intense, environments. The only organizations that can survive this sustained competition are those capable of adapting their efforts. Hence, the degree to which alliance partners are able to modify their implementation effort, which we refer to as *effort adaptability*, matters in the performance of alliances. This is consistent with studies of firm adaptability by authors such as Sanchez (1995), Evans (1991), and McKee et al. (1989).

Hypothesis 9: *Greater effort adaptability leads to greater alliance performance.*

METHOD

To test the hypothesized relationships empirically, we employed a questionnaire survey methodology and estimated the resulting models using the partial least squares path modeling (PLS-PM) approach, using PLS-Graph. We first discuss the sample and our measures, then the data collection procedure, and finally comment on the method of estimation.

SAMPLE

We utilized two separate samples for testing the proposed model. The first sample was a stratified random selection of 1,500 organizations, in industries in which non-equity alliances—our unit of analysis—are more prevalent. The second sample was obtained from the German Australian Chamber of Industry and Commerce, and based on a population of 211 firms (excluding overlap with the first sample). The overall response rates were 10% for Sample 1 and 22% for Sample 2. To ensure that the responses were appropriate for examining performance aspects, we further excluded from our dataset those alliances that were not yet functioning at their full operating stage.[2] This resulted in N=128 usable responses from Sample 1, and N=46 from Sample 2—an overall acceptable response rate and sample size for our theory testing purposes.[3] Additionally, the appropriateness of the sample data was assessed by carrying out extensive follow-ups to determine why respondents chose not to participate, and comparisons were made between early and late respondents (Armstrong and Overton, 1977). By far the number one reason (29% in Sample 1 and 36% in Sample 2) for non-participation was the fact that the firm did not currently engage in any non-equity alliances. Hence, there appeared to be no obvious biases introduced in the data due to the significant degree of non-response.

Insert Table 2 here

A breakdown of the samples is provided in Table 2. Firstly, organizations operating in diverse manufacturing and services sectors are included in the samples—providing the desired variation with respect to the elements of the alliance into the data. Secondly, using two samples allows for the comparison between distinct and independent estimations. Both aspects strengthen the empirical examination of our models and hypotheses, thereby providing a basis to derive

[2] The survey included one scale that asked respondents to state the operating stage of their alliance. The responses regarding this scale allowed us to identify those alliances that had not yet been able to make full use of their capabilities. Although there were none in Sample 2, there were 18 in Sample 1.

more robust conclusions.

Our key informants for the survey were managers with operational responsibility for, and hence knowledge about, the relevant alliance arrangements (Kumar et al., 1993). Managers were first asked to identify one specific non-equity alliance in which they were involved, and to describe the alliance in some detail. They were then instructed to use this specific alliance as the point of reference in answering the remainder of the questionnaire.

CONSTRUCT MEASURES

In order to appropriately take account of the complexity of our framework, we developed a suitable measurement instrument based on managerial interviews and related scales published previously. There are two modes that are suitable to measure different types of constructs: the formative mode and the reflective mode (Coltman et al., 2008; Diamantopoulos and Winklhofer, 2001; Gudergan, 2008; Jarvis et al., 2003). We followed the criteria put forward by Jarvis et al. (2003) to determine whether scales should be established in formative or reflective mode. Thirty-nine items operationalized the nine latent constructs that are embedded in our model, of which all but one construct was measured in the formative mode. All survey questions (outlined in Table 1) use Likert or semantic differential scales—these are discussed in the next sections.

Alliance Performance refers to the extent to which a partner perceives that the alliance has realized objectives and created value; adapted from Bucklin and Sengupta (1993). This conceptualization—in terms of goal fulfillment—is both, most commonly used in the field of measuring alliance performance (Lunnan and Haugland, 2008) and most suitable for our analysis, as the primary value-creating activities differ across alliances that are set up for purposes ranging from co-marketing, to R&D, to joint production; thus making the specification of a single metric to

[3] Sample 1 and the combined sample are sufficient in terms of sample size (i.e., comply with the 'ten times rule'—see Barclay et al., 1995) and, as we outline in subsequent sections, all samples do suffice in terms of statistical power to draw conclusions from our analyses.

measure performance problematic (Geringer and Hebert, 1989). Following from the interviews with alliance managers, we identified four relevant, heterogeneous and independent components that define alliance performance (i.e., a formative measurement approach was chosen in which the observed indicators cause or form the latent construct performance, see Jarvis et al., 2003). These components were: the fulfillment of *strategic* and *alliance-specific objectives*, as well as the fulfillment of objectives related to *overall value* and the creation of *secure income*. Therefore, a four-item, eleven-point, formative scale ranging from 'significantly lower than' to 'significantly greater than' was used to measure the construct.

Turning to our exogenous latent constructs operationalizing the resource-based thinking, we define *Capability Complementarity* as the extent to which each alliance partner's capabilities supplement the other's (based on the logic of Harrison et al., 1991). More specifically, we measure the degree to which the partners' *resources*, *knowledge*, *capabilities,* and *skills* overlap, and propose a formative measurement approach. We use a seven-point scale operationalizing shares of overlap that involves less potential for measurement error compared to drawing on the partners' industry (Sakakibara, 1997).

Alliance Investment concerns the investments made by both partners necessary to establish the alliance. Based on our managerial interviews, we advanced previously used measurement approaches (Murray and Kotabe, 2005; Young-Ybarra and Wirsema, 1999) and established six categories of investments which are relevant to constituting this formative construct: investments in *information systems, operating procedures* and *routines, new processes, personnel* dedicated to the alliance, *restructuring* departments, and finally, *culture*. Investments are assessed in terms of the focal partner's investments, and with regard to the perception of the alliance partner's in-

vestments. For example, our survey included statements such as: 'Our total investment in …' as well as 'Our partner's total investment in…' is 'very minor' to 'very substantial'.

Alliance investment and capability complementarity are assumed to predict the capability of the alliance to compete effectively in its target market(s), referred to as the *Competitive Alliance Capabilities*. This construct is measured—again in formative mode—by benchmarking the alliances' own valuable *resources, knowledge, capabilities,* and *skills* relative to the competition (referring to our capability measurement approach). Survey items captured, for example, the following: 'Our alliance has significantly more unique valuable resources/knowledge/capabilities/ skills than are/is available to our competitors.' These competitive capabilities are hypothesized to directly impact the alliance's performance.

Alliance Implementation Effort concerns both partners' striving to execute relevant elements of the alliance strategy, making appropriate use of the unique capabilities of the alliance. It is echoed in behavior encompassing the dimensions of *completeness, accuracy, quantity, utilization of available competencies,* and *coordination* in performing the designated functional roles of the alliance. The construct is, again, operationalized in formative mode and involves both the focal and perceived partner organization evaluations. Amongst others, items include the following: 'We always perform all our functional roles' and 'Our partner is always extremely accurate in performing their functional roles'.

Effort Adaptability denotes the extent to which the partners' efforts can be easily adjusted to changing circumstances. We measured this construct formatively as the ease at which functional roles could be adapted to varying *competitor activities, customer preferences, cost structures, government regulations,* and/or *volume requirements*. Although there are studies on alliances proclaiming the need to respond to change (Lunnan and Haugland, 2008), this study ap-

pears to be the first to cover one of the key aspects empirically; namely, adaptability. Statements used in our survey include: 'It is extremely difficult to adjust each partner's relevant functional roles to changing competitor activities' and 'It is extremely difficult to adapt each partner's relevant functional roles to changing customer preferences'.

In addition to adaptability, we argue that alliance innovation affects the performance of an alliance. Innovation is in turn influenced by the (already defined) competitive alliance capabilities, as well as by learning and creativity. In this regard, Nielsen and Nielsen (2009) point to the integration and enhancement of available and new knowledge, the willingness to explore new ideas and to consider different alternatives—aspects that are separated into the two constructs of learning and creativity.

Alliance Learning refers to the development of knowledge or insights within the alliance. It is measured in formative mode with regard to improving, for example, *market(ing) insights*, *understanding of strategy implementation*, and *managerial decision making abilities*, which covers the most important aspects of a variety of operationalizations of learning (Chen et al., 2009; Kale and Singh, 2007; Liu et al., 2010; Lyles and Gudergan, 2006)—with regard to our learning conceptualization.

Alliance Creativity is the process of generating novel ideas within the alliance. Our measurement scale draws on three facets that are reflections of creativity within the alliance, and hence, operationalize them in a reflective mode—in the sense that the observed indicators are caused or formed by the latent construct alliance creativity (Jarvis et al., 2003)—they are experimenting with *nontraditional methods*, *novel solutions*, and *creativity*, during decision making.

Finally, *Alliance Innovation* is defined as the sifting, refining, and implementation of novel ideas within an alliance, and is operationalized in a formative mode by referring to innovative

structures, *administrative* as well as management *processes*, and *marketing mix elements* (i.e., product, price, distribution, and communication) (Nielsen and Nielsen, 2009). Hence, we propose a comprehensive measurement approach which is not restricted to only one measure, such as the number of patents—as used, for instance, in Sampson (2007).

Our more comprehensive approach also finds strong backing in managerial practice and thinking. As stated by Louis Camilleri, Chairman and CEO of Philip Morris International, Switzerland/US: "I think it is a mistake to restrict innovation to the product. We have the ambition to innovate across everything we do, to become more effective and to enhance our execution abilities […] Innovation goes way beyond just the products. It is the way you market the product, the way you sell the product, the whole aspect of consumer engagement" (PWC, 2011, p. 24).

The above measures were embedded in our survey instrument, which we developed following the guidelines on questionnaire design given by Podsakoff et al. (2003). We ran Harmann's single-factor test (Podsakoff and Organ, 1986) suggesting that there was no "general factor" in the data that would represent a common method bias. This finding, combined with the carefully developed survey instrument, suggests that there does not appear to be a common method bias with respect to our survey (Lane et al., 2001; Mattila and Enz, 2002) and that the quality of our data is suitable for our empirical study.

METHOD OF ESTIMATION

The survey data were analyzed using the PLS technique (using the licensed version of PLS-Graph 3.0)—see Chin (1998, 2001), Hair et al. (2011), Henseler et al. (2009), and Lohmöller (1989), for an overview of the methodology, and Birkinshaw et al. (1995), Johansson and Yip (1994), Robins et al. (2002), for some illustrative applications in strategic management. PLS-PM is especially suited to research questions of high complexity but low theoretic information

(Henseler et al., 2009; Barclay et al., 1995), a point that is particularly relevant given that non-equity alliance research is still in its development stage—with concepts and relationships not yet empirically examined so much as to converge to a universally accepted overarching model. The emphasis in our study is on theory building rather than theory testing—building on the notion of soft-modeling in PLS-PM (Wold, 1980). In addition, PLS-PM involves the following characteristics—some of which are of further advantage to our analyses: (1) it accepts small sample sizes in order for the algorithm to work—this is important given that one of our two samples is relatively small (we acknowledge that there are limitations in interpreting data from small samples and therefore draw insights from this relatively small sample in only a supplementary fashion, see the discussion in Marcoulides and Saunders, 2006 and Ringle et al., 2012; to further interpret our findings we also report the results from having conducted statistical power tests, see Cohen, 1992 and Faul et al., 2009); (2) it can deal with complex causal models and our model has some level of complexity; (3) it does not require multivariate normality which applies to our study; (4) it produces consistent parameter estimates, and (5) it is more suitable, compared to covariance-based methods, when measuring formative constructs—which applies to the majority of our constructs (Fornell and Bookstein, 1982; Henseler et al., 2009; Lohmöller, 1989; Reinartz et al., 2009).

RESULTS

CAUSAL MODEL ESTIMATION AND ASSESSMENT

The hypothesized relationships and empirical estimations are illustrated in Figure 2. Before interpreting results on these relations in our inner model, we evaluate the suitability of the measures (i.e., outer models) used to operationalize our latent variables. Based on assessing the correct specification of our measurement models, we will then evaluate our inner model and its

predictive power (Henseler et al., 2009).

Insert Figure 2 here

Outer Model Assessment

As described, our outer models include both formative constructs (alliance performance, competitive alliance capabilities, capability complementarity, alliance investment, alliance implementation effort, effort adaptability, alliance innovation, and alliance learning) and one (alliance creativity) for which we relied on an effect structure and which is reflected in certain behaviors that we measured (Bollen, 1989). Ultimately, the appropriateness of these measurement structures is determined theoretically. In applying the criteria put forward by Jarvis et al. (2003), we chose the formative scales because each of the latent variables is viewed as an explanatory combination of its indicators; representing distinct, independent dimensions of the construct investigated. The construct embodies a set containing heterogeneous, independent components of which each represents a distinct and unrelated facet of the construct within the theoretic context in which the construct is employed (Fornell, 1987; Fornell and Bookstein, 1982). In contrast, we chose our one reflective scale as all observed indicators are viewed as being caused by one underlying common dimension sharing a common core of alliance creativity. The indicators in this case have unidimensional representation within the theoretic context in which we used them (Bagozzi, 1982; Bagozzi and Fornell, 1982; Fornell and Bookstein, 1982).

Nonetheless, to aid in justifying our formative structures we considered their validity using a vanishing tetrad test for causal indicators—see Bollen and Ting (2000), Gudergan et al. (2008), and Venaik et al. (2004) who demonstrated the validity of tetrad tests in management research. In this study we draw on the test put forward by Bollen and Ting (2000) which uses the "nested" vanishing tetrads that are implied by comparing the two measurement models and derives from

the work of Spearman. In a vanishing tetrad, the theoretic model implies that the product of a pair of covariances should equal the product of another pair—a hypothesis that can be tested statistically. The tetrad test is a confirmatory rather than exploratory procedure because it requires researchers to specify which tetrads should vanish, which is only possible once they have "narrowed down their plausible structures to a limited number of alternatives" (Bollen and Ting, 2000). With regard to assessing the reliability (i.e., unidimensionality) of the reflective structure of alliance creativity, we carried out factor analysis (Gerbing and Anderson, 1988; Gorsuch, 1997). The statistics for the vanishing tetrad tests are given in Table 3 and refer to the combined dataset (tests on the individual samples yielded similar results).

Insert Table 3 here

Alliance Creativity was confirmed as reflective, as indicated by a non-significant chi-square statistic of the vanishing tetrad test (t=2.27; p=0.321). Moreover, factor analysis indicated that it was indeed unidimensional (a single eigenvalue of 2.383, i.e., greater than 1.0, and share of explained variance of 79%) and reliable (with factor loadings exceeding 0.7 and Cronbach's α=0.870). The tetrad test pointed to some question about the formative nature of capability complementarity. In examining this issue we can confirm that this was not due to zero covariances but to the structure of the covariances of the first item referring to the overlap of resources with respect to the three other measures that addressed knowledge, capabilities, and skills. When we accounted for this by excluding the item on resources, the formative structure was confirmed (t=8.22, p=0.015). For consistency, we removed the item in question in all subsequent analyses. Further results of factor analyses and tetrad tests showed that the formative structures chosen were indeed the most suitable specification to measure the respective constructs.

Inner Model Assessment

The evaluation of the structural model is based on assessing the percentage of variance explained, or the R-square, for the dependent latent constructs and by examining the size and significance of the structural path coefficients[4] as well as the statistical power of our model. We refer to the t-statistics obtained from the Jackknife re-sampling procedure[5] to evaluate our estimations. Although the size of Sample 2 is limited, we report the results for both samples individually as well as for the combined dataset (see Table 4 which also presents t-statistics and p-values). This allowed us to conduct parallel tests of our model and provides a better basis for assessing our proposed model of alliance performance. Overall, the three estimations yield consistent findings, which suggest that our model is robust: The predictor constructs explained *Alliance Performance* adequately in terms of R-square, and statistical power[6] was above the commonly accepted threshold of 0.8 (Cohen, 1992, p. 156) for the combined sample as well as the two subsamples. Similarly, for the effects on *Competitive Alliance Capabilities* statistical power also exceeded the threshold; the same is true for the effects on *Alliance Innovation*. The estimations provided significant support for (almost) all relationships (except one in Sample 2), and the directions and magnitudes of all relationships were consistent.

To examine the similarity of coefficients in the two samples, we undertook two tests. First,

[4] Our estimations are based on the path weighting scheme which is the default setting in PLS-Graph.

[5] We selected the Jackknife re-sampling procedure to produce t-statistics as a means for assessing the significance of our path coefficients. The Jackknife procedure is more appropriate for small sample sizes (i.e., lower than 100) (e.g., Chin and Newsted, 1999; Chiquoine and Hjalmarsson, 2009; Nevitt andHancock, 2001) and one of our samples is relatively small. As t-statistics obtained from the Jackknife re-sampling procedure tend to produce conservative estimates of significance (see Falk and Miller, 1992), we refer to t-statistics obtained from the Jackknife re-sampling procedure in all three estimations. This allows us to have a common basis for comparing these three estimations (i.e., the two individual samples and the combined sample). We chose the default PLS-Graph setting with a Jackknife case deletion of 1 which generates robust t-statistics (Wildt et al., 1982) and the Construct Level Changes Preprocessing Option. The adjusted t-statistic in the PLS-Graph Jackknife output represents a correction for the possibility of interdependence between Jackknife estimates (i.e., the pseudo values). Using Gray and Schucany's (1972) suggestion, the intraclass correlation r is assumed to equal 1/N where N is the number of re-samples. The resulting effect is to have a more conservative estimate of the t-statistic.

[6] We used the software G*Power 3.1.3 (Faul et al., 2009) to conduct a post-hoc power test (F test: Linear multiple regression: Fixed model, R^2 deviation from zero) for each of the two individual sub-samples and for the combined sample for an alpha of 0.05 (0.10). For the model that explains *Alliance Performance*, power was 1.00 (1.00) for the combined sample, 1.00 (1.00) for Sample 1, and 0.99 (0.99) for Sample 2, respectively. For the model that explains *Alliance Innovation*, power was 1.00 (1.00), both for the combined sample as well as for Sample 1, and 0.99 (0.99) for Sample 2. And for the model that explains *Competitive Alliance Capabilities*, power was 0.99 (0.99), again for both, the combined sample and Sample 1; for Sample 2 power was 0.99 for an alpha of 0.10 and 0.98 for an alpha of 0.05.

a Wilcoxon Signed Ranks Test confirmed that there was no significant difference between the directionality and magnitude of the coefficients (Z=1.245, p=0.213). Second, F-tests on the sums-of-squared errors of the components of the model (equivalent to a Chow test (Chow, 1960) except that rather than conducting the test on the reduced form of the entire model we did so on each component) showed that there was no difference between estimated individual sample models and the combined sample model—the null hypothesis being that there is no sample difference.

Insert Table 4 here

In addition, we conducted post-hoc power tests on the path coefficients associated with the key hypotheses that we put forward to explain variations in *Alliance Performance* by excluding the direct effects of variables in sequence from the model (we followed the procedure in Coltman et al., 2010). The statistical power[7] of each of the paths was above the threshold of 0.8 for an alpha level of 0.05 except for two that were above that threshold for an alpha level of 0.10. Based on these tests we have adequate power to validate our model.

Given the statistical validity and consistencies across all three estimations, we turn to the discussion of results focusing on the combined dataset. The estimated model (see Figure 2) has an R-square for *Alliance Performance* of 46%. Additionally, the R-squares for *Competitive Alliance Capabilities* and *Alliance Innovation* are 19% and 39% respectively. Hence, the structural model explains a reasonable proportion of variance in the performance and intermediate constructs.

[7] We used the software G*Power 3.1.3 (Faul et al., 2009) to conduct further post-hoc power tests (T tests: Linear multiple regression: Fixed model, single regression coefficient) and achieved the following powers for an alpha of 0.05 (0.10): *Competitive Alliance Capabilities* 0.99 (0.99) [this is based on the construct being excluded], *Competitive Alliance Capabilities* 0.75 (0.84) [this is based on keeping the indirect effect of *Competitive Alliance Capabilities* on *Alliance Performance* through *Alliance Innovation* but excluding the direct effect of *Competitive Alliance Capabilities* on *Alliance Performance*], *Alliance Innovation* 0.98 (0.99), *Alliance Implementation Effort* 1.00 (1.00) and *Effort Adaptability* 0.79 (0.87).

EFFECTS ON NON-EQUITY ALLIANCE PERFORMANCE

Examining the effects on *Alliance Performance*, we find that all paths to *Alliance Performance* are significant and in the hypothesized directions. Supporting the initial hypotheses, *Competitive Alliance Capabilities* (0.151), *Alliance Implementation Effort* (0.311), *Alliance Innovation* (0.321), and *Effort Adaptability* (0.166) have a significant positive influence on performance. Hence, the classical RBV thinking that competitive competencies generate quasi-rents is confirmed. However, it is especially the *Alliance Implementation Effort* that matters in enhancing performance. Although the results indicate that raw inputs (*Competitive Alliance Capabilities* and *Implementation Effort*) are important, they are, as we argue, not sufficient in explaining *Alliance Performance*. Change, flexibility and innovation aspects also need to be considered. This is not only visible in the significant path coefficients of *Effort Adaptability*[8] and *Alliance Innovation*, but is revealed by testing alternative theoretic models using the combined dataset: first, a pure RBV-based model; second, a model combining the RBV constructs with adaptability, and third, a model combining the RBV constructs with innovation (as shown in Table 5).

The first alternative model disregards both *Alliance Innovation* and *Effort Adaptability* and focuses purely on the constructs derived from the resource-based theory of the firm (*Capability Complementarity*, *Investment*, *Competitive Capabilities*, and *Implementation Effort*), leading to an R-square for the performance construct of only 36%. The second model additionally includes the role played by *Effort Adaptability* with an R-square for the performance construct of 41%. The third model involves, in addition to the first, pure RBV model, the influence of *Alliance Innovation*, resulting in an R-square for the performance construct of 43%.

[8] We note that the power for the effect of *Effort Adaptability* on *Alliance Performance* is valid for an alpha of 0.10 (power = 0.87) whereas for an alpha of 0.05 (power = 0.79) it is just below the threshold of 0.80.

Insert Table 5 here

The results from the second alternative model allow us to conclude with an important and necessary first condition, stressing the ability to adapt the alliance's raw inputs flexibly. *Effort Adaptability* directly and significantly affects performance from a strategic flexibility perspective (and increases the explanatory power of a model that is solely based on the RBV). Models that do not account for the necessity to adapt would be insufficient in providing a comprehensive explanation of performance. Moreover, the findings from the first two alternative models further substantiate the importance of *Competitive Alliance Capabilities* in producing *Alliance Performance*: For the RBV model the path coefficient of *Competitive Alliance Capabilities* on *Alliance Performance* is 0.263 and for the RBV model, including *Adaptability,* it is 0.253 respectively. The results from the third alternative model underscore the importance of incorporating Schumpeterian rents. *Alliance Innovation* forms the most important driver of alliance performance (and, again, provides additional explanatory power when added to a simple RBV model).

Alliance Innovation partially mediates the relationship between *Competitive Alliance Capabilities* and *Performance*: 41% of the total effect of *Competitive Alliance Capabilities* are accounted for by the indirect effect of *Alliance Innovation* (variance accounted for is at 0.4093). Notwithstanding this indirect effect, there is a small but significant direct effect of *Competitive Alliance Capabilities* on *Performance* which is above the threshold of 0.1 put forward by Lohmöller (1989). The inclusion of *Competitive Alliance Capabilities* as a construct in our model is theoretically meaningful and both its direct and indirect effects play a role in generating *Alliance Performance* (which is also supported by the statistical power tests concerning the direct path coefficient which we reported in an earlier section). The implication of these findings is that although raw inputs (i.e., *Competitive Alliance Capabilities* and *Implementation Effort*) matter,

the innovative and flexible use of them has a significant and material influence on the performance of an alliance.

EFFECTS ON COMPETITIVE CAPABILITIES IN NON-EQUITY ALLIANCES

The analysis of the effects on *Competitive Alliance Capabilities* supports our hypotheses as all PLS paths are significant and in the hypothesized directions. *Capability Complementarity* (0.308) and *Alliance Investment* (0.320) have a significant positive influence on the *Competitive Capabilities* of an alliance.

A similar logic to what we used to explain *Alliance Performance* underlies the particulars of *Competitive Alliance Capabilities*. The findings suggest that raw inputs, such as *Alliance Investment*, play a role in the development of *Competitive Alliance Capabilities*. However, this input is not sufficient to understand the detailed intricacies of the relationship. One important and necessary additional condition is the ability to use these inputs while pooling the partners' capabilities. Models that do not account for this necessity are insufficient in providing a comprehensive explanation of *Competitive Alliance Capabilities*. The implications of these findings are, again, that raw inputs matter, and the selection of partners based on *Capability Complementarity* to pool necessary capabilities and develop *Competitive Alliance Capabilities* is important. Hence, recent studies focusing on the selection of partners as a critical factor of success in building alliances address an important issue and are confirmed (Nielsen and Gudergan, 2012; Gulati et al., 2009; Holmberg and Cummings, 2009; Mitsuhashi and Greve, 2009; Shah and Swaminathan, 2008). In addition, our results pinpoint the importance of investing in the alliance's resources in order to unlock the potential inherent in each partner's capabilities; through forming a non-equity partnership, partners invest in alliance-related IT, processes, human re-

sources, the organization and business culture as these investments critically influence competitive capabilities and, thus, performance (see also the discussion in Murray and Kotabe, 2005).

EFFECTS ON NON-EQUITY ALLIANCE INNOVATION

Our estimates show that *Alliance Learning* (0.243), *Alliance Creativity* (0.252), and *Competitive Alliance Capabilities* (0.326) are significant drivers of *Alliance Innovation*. Therefore, it is not only the competitive alliance capabilities but also creativity and learning that have significant direct effects on the alliance's potential to be innovative and, thus, successful. Although there is a rich body of work on alliance learning, the outcomes of these learning processes are understudied (Nielsen and Nielsen, 2009; Van Wijk et al., 2008). We provide further support for the notion that one outcome of learning is innovation. Learning enables the improvement of knowledge and insights in the alliance. In supplementing the creative generation of novel ideas within the partnership, there is a clear positive effect to innovation, which, in turn, is the strongest driver of performance. Hence, given the essential direct and indirect effects on *Alliance Performance*, our model explains well what drives *Alliance Innovation* (given the R-square of nearly 40%), namely: the development of *Competitive Alliance Capabilities,* the application of creative, non-traditional techniques within the alliance (*Alliance Creativity*), and the improvement of knowledge and insights via *Alliance Learning.*

DISCUSSION OF RESULTS

CONTRIBUTIONS TO THEORY

The results support our conceptualization of strategic performance in non-equity alliances as the realization of value originating from (a) the combined capabilities within the alliance stemming from leveraging the combined resource base contributed by the alliance partners (i.e., *Competitive Alliance Capabilities*) and (b) the value generated from the innovativeness and

adaptability of the alliance; with the former representing quasi-rents and the latter Schumpeterian rents. We have shown that an alliance's competitive position is enhanced through investment in resources. It is also clear that the development of capabilities through the investment in, and pooling of, complementary resources not only occurs in organizations that are equity-governed but also in those where governance is not based on equity agreements. In addition, the relationships amongst the constructs of learning, creativity, and innovation in alliances are validated and related to performance. We have also shown that accounting for innovation and its antecedent factors provides a more comprehensive explanation of *Alliance Performance*.

Overall, we offer empirical support for a theoretic framework that explains an important set of antecedents to alliance performance in general. The findings suggest that both quasi-rents and Schumpeterian rents constitute the strategic performance of non-equity alliances and, hence, that alliances require the capacity to change and innovate in a strategically flexible manner. The comparison of R-squares of alternative models suggests that the model proposed and tested in this study explains the strategic performance of non-equity alliances better than those that narrowly focus on the RBV alone. As a consequence, this study represents a small but significant step forward towards understanding the intricacies of non-equity alliance performance. We are now better able to understand the respective roles played by various alliance factors and derive insights that lead to improved alliance performance. Our findings support the need to create *competitive alliance capabilities*, to facilitate *alliance learning* and *creativity* in order to shape *alliance innovation*, and to ensure appropriate amounts of *adaptable effort* for driving alliance performance. Importantly, this study demonstrates how strategic performance can be achieved for non-equity partnerships, an unnecessarily neglected area of the literature on alliances.

MANAGERIAL IMPLICATIONS

From a managerial perspective, this study offers ideas on where to focus attention when attempting to enhance performance in non-equity alliances. When organizing the implementation processes, managers should emphasize the amount of their firm's inputs and the extent to which those inputs are contributed in a flexible and innovative manner. We show that in alliances where greater capabilities exist and partners put in larger amounts of effort to perform their designated functional roles, performance objectives are more fully accomplished. Our findings also point out that managers should create competitive alliance capabilities by selecting partners with complementary capabilities and by pooling these capabilities effectively. At this point, managers should not restrain from undertaking investment into the partnership. Furthermore, when establishing the alliance, partners should not confine the adaptability of their efforts—this will allow them to take advantage of changing circumstances more efficiently. Our findings also suggest that learning and creativity should be facilitated within the alliance in order to boost innovation. Therefore, managers should put in place structures and processes for interactions that support learning and creativity, while avoiding associated impediments.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

We see this study as a foundation for future research that will further investigate, in greater detail, the specific factors that contribute to alliance performance. The most salient feature of this study is that it paints a picture of *what matters* in the context of non-equity alliance performance. It illustrates that we need to understand the factors that impact on the strategic performance of non-equity business partnerships.

Even though this was a cross-sectional study, some methodological limitations should be addressed. For example, we need to understand whether our formulation is consistent across industries. This requires a series of industry models that can validate whether the structure of the

model is identical from industry to industry. In addition, our responses come only from one partner of the alliance. Combining the responses from both partners of the dyad would allow assessment of whether both partners' perspectives are consistent, and this would provide additional insights into the validity of our model.

The above limitations give rise to a number of research directions. An additional area for research is to undertake industry-specific surveys and analyses. This would provide greater depths of understanding into the generalizability of our framework across different sectors. Finally, a potential—though challenging—endeavor for future research is to collect and analyze dyadic data.

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Figure 1: An Alliance Performance Model

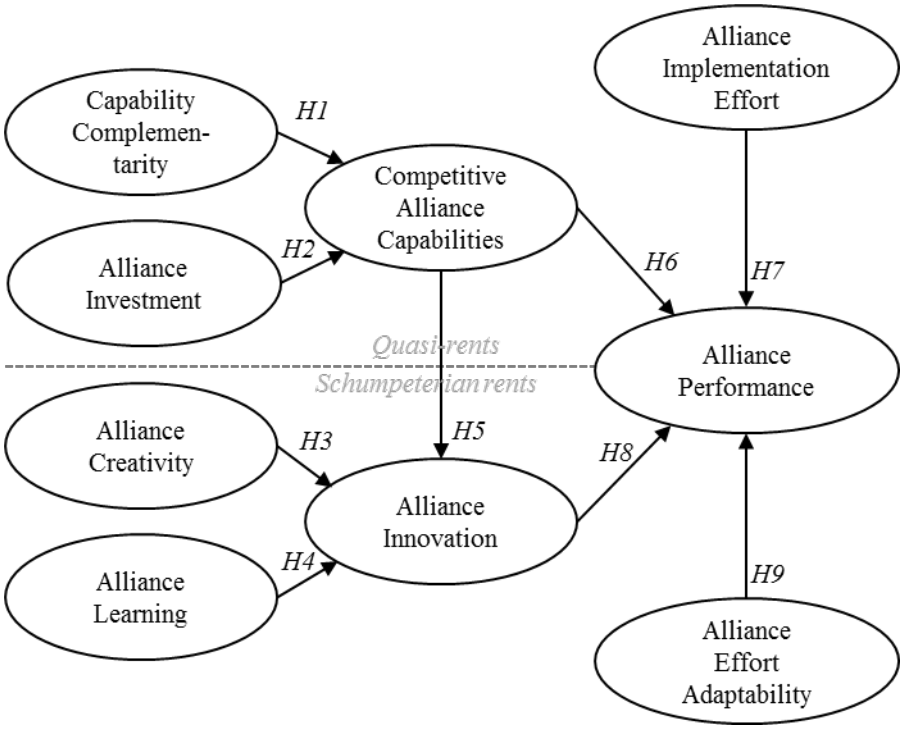


Table 1: Construct Measures

Alliance Performance (formative) *The extent to which the alliance has realized specified objectives and created value.* The extent to which this alliance… (1) helps in the achievement of our organization's strategic objectives (2) helps in the accomplishment of all alliance-specific objectives (3) contributes to the enhancement of the overall value of our business (4) generates secure income …is [-5: significantly lower than/…/0: exactly/…/5: significantly greater than] what we had anticipated initially. 11point scale, adapted from Bucklin and Sengupta, 1993.
Capability Complementarity (formative) *The extent to which each partner's competencies supplement the others'.* Our…. (1) resources (2) knowledge (3) capabilities (4) skills …overlap(s) [1: 0%/…/7: 100% (7 point scale)] with those/that of our partner.
Alliance Investment (formative) *Investment made by all partners that form the foundation for the alliance.* Both for [focal organization/partner organization] [Our/Our partner's] total investment in…. (1) information systems dedicated to this alliance (2) adapting [our/its] operating procedures and routines to [this particular partner/our organization] (3) new processes tailored to [the particular capabilities of our partner/our particular capabilities] (4) personnel dedicated to this alliance (5) restructuring [our/its] department to ensure it fits well with [our partner/us] (6) adapting [our/its] culture to [that of our partner/ours] …is [1: very minor/…/7: very substantial (7 point scale)].
Competitive Alliance Capabilities (formative) *An alliance's sustainable capability to compete effectively in its markets.* Our alliance has [1: no unique/…/7: significantly more unique (7 point scale)]… (1) valuable resources (2) valuable knowledge (3) valuable capabilities (4) valuable skills … than are/is available to our competitors.

Alliance Implementation Effort (formative)

The combined striving of all partners in executing relevant elements of the business strategy, making appropriate use of the alliance competencies.

Both for [focal organization/partner organization]

(1) [We/Our partner] always perform all [our/their] functional roles.

(2) [We are/Our partner is] always extremely accurate in performing [our/their] functional roles.

(3) [We/Our partner do(es) not] coordinate [our/their] functional roles with [those of our partner/ours] at all.

(4) [Our/Our partner's] contribution is always very substantial.

(5) [We/Our partner make(s)] significant use of this alliance's competencies in performing [our/their] functional roles.

7 point scale ranging from 1: completely inaccurate, to 7: completely accurate.

Alliance Learning (formative)

The development of knowledge or insights that influence behavior within the alliance.

This alliance helps us…

(1) create new market(ing) insights.

(2) provide a greater understanding of the implementation of marketing strategy.

(3) increase our confidence in making sound marketing decisions.

(4) enhance our managerial decision-making ability.

7 point scale ranging from 1: completely inaccurate, to 7: completely accurate.

Alliance Creativity (reflective)

The process of generating novel ideas within the alliance.

In this alliance we…

(1) experiment with nontraditional methods in our decision making.

(2) have novel solutions during decision making.

(3) are creative in making decisions.

7 point scale ranging from 1: completely inaccurate, to 7: completely accurate.

Alliance Innovation (formative)

The shifting, refining, and implementation of novel ideas within the alliance.

(1) Alliance/marketing department structure(s) are…

(2) Marketing management/administrative processes are…

(3) Marketing mix elements such as product, pricing, distribution, and communication arrangements are…

(4) Marketing and management processes such as customer acquisition/retention activities are…

[1: not innovative at all/…/7: extremely innovative (7 point scale)].

Effort Adaptability (formative)

The extent to which effort can be modified to varying circumstances.

It is extremely difficult to adjust/adapt each partner's relevant functional roles to…

(1) changing competitor activities.

(2) changing customer preferences.

(3) changing cost structures.

(4) changing government regulations.

(5) fluctuations in volume requirements.

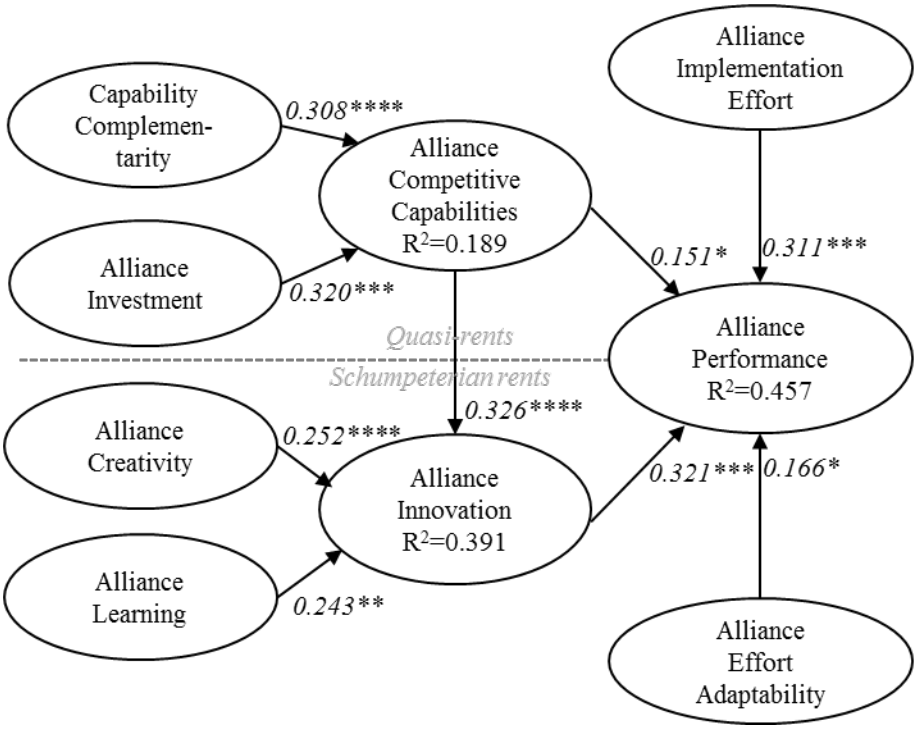
7 point scale ranging from 1: completely accurate, to 7: completely inaccurate.

Table 2: Stratified Random Sample and Responses

	Sample 1		Sample 2	
Industry	Size	Responses	Size	Responses
Manufacturing	531	50	112	27
Communication Services	20	3	5	1
Information Technology Services	81	9	21	6
Media Services	25	1	3	0
Financial Services	45	5	3	1
Insurance Services	22	3	2	0
Hospitality Services	31	0	1	0
Transport Services	46	6	2	1
Leisure Services	34	2	0	0
Retail Services	244	26	24	4
Wholesale Services	421	41	38	6
Total	1,500	146	211	46

Note that we have excluded 18 organizations from Sample 1 as they were not at the full operational stage.

Figure 2: PLS Model Estimation Using the Combined Dataset



Significance level (p-value): **** p < 0.001, *** p < 0.01, ** p < 0.05, * p < 0.10

Table 3: Test of Causal Indicators (Bollen and Ting, 2000)

	χ^2(Df)	Df	Significance
Alliance Performance	20.60	2	0.001
Capability Complementarity	0.66	2	0.717
Alliance Investment (Focal)	16.69	9	0.053
Alliance Investment (Partner)	24.95	9	0.003
Alliance Competitive Competencies	6.06	2	0.048
Alliance Implementation Effort (Focal)	16.43	5	0.005
Alliance Implementation Effort (Partner)	19.63	5	0.001
Alliance Creativity	*2.27*	*2*	*0.321*
Alliance Learning	7.16	2	0.021
Alliance Innovation	11.31	2	0.004
Effort Adaptability	20.08	5	0.001

N = 174. The tests were conducted on the combined dataset. Reflective construct is in italics.

Table 4: Structural Model Results

	Pro-posed effect	Sample 1 Path Coefficient (t-statistic) (p-value)	Sample 2 Path Coefficient (t-statistic) (p-value)	Combined sample Path Coefficient (t-statistic) (p-value)	Test of sample difference F
Effects on Competitive Alliance Capabilities		**[R^2=0.224]**	**[R^2=0.304]**	**[R^2=0.189]**	0.075 ns
H1: Capability Complementarity	+	0.272** (1.9846) (0.0493)	0.319** (2.1603) (0.0361)	0.308**** (3.3525) (0.0009)	
H2: Alliance Investment	+	0.381**** (3.4268) (0.0008)	0.434 ns (0.0020) (0.9984)	0.320*** (2.6245) (0.0094)	
Effects on Alliance Innovation		**[R^2=0.409]**	**[R^2=0.408]**	**[R^2=0.391]**	0.411 ns
H3: Alliance Creativity	+	0.265*** (2.9332) (0.0039)	0.314** (2.3108) (0.0254)	0.252**** (4.9323) (0.0000)	
H4: Alliance Learning	+	0.198*** (2.6585) (0.0088)	0.372*** (2.6904) (0.0099)	0.243** (2.1289) (0.0346)	
H5: Competitive Alliance Capabilities	+	0.359**** (3.5987) (0.0004)	0.231** (2.0994) (0.0414)	0.326**** (3.6200) (0.0003)	
Effects on Alliance Performance		**[R^2=0.476]**	**[R^2=0.533]**	**[R^2=0.457]**	0.394 ns
H6: Competitive Alliance Capabilities	+	0.109* (1.8831) (0.0619)	0.296** (2.3154) (0.0252)	0.151* (1.6923) (0.0923)	
H7: Alliance Implementation Effort	+	0.308** (2.0097) (0.0465)	0.385** (2.1872) (0.0339)	0.311*** (2.9550) (0.0035)	
H8: Alliance Innovation	+	0.369*** (3.0606) (0.0026)	0.180* (1.6855) (0.0988)	0.321*** (2.8654) (0.0047)	
H9: Effort Adaptability	+	0.131* (1.6856) (0.0943)	0.258* (1.8626) (0.0690)	0.166* (1.7141) (0.0883)	

Significance level (p-value): ****p < 0.001, ***p < 0.01, **p < 0.05, *p < 0.1, ns = insignificant

Table 5: Structural Model Results – Alternative Models (Combined Sample)

	RBV-Model	RBV-Model including adaptability	RBV-Model including innovation
Explanatory Power in terms of Explaining Alliance Performance	**[R^2=0.364]**	**[R^2=0.406]**	**[R^2=0.433]**
Path Coefficients (RBV Constructs)			
Capability Complementarity → Competitive Alliance Capabilities	0.311	0.304	0.310
Alliance Investment → Competitive Alliance Capabilities	0.315	0.323	0.319
Competitive Alliance Capabilities → Alliance Performance	0.263	0.253	0.154
Alliance Implementation Effort → Alliance Performance	0.462	0.422	0.318
Path Coefficients (Adaptability Construct)			
Effort Adaptability → Alliance Performance		0.219	
Path Coefficients (Innovation Constructs)			
Competitive Alliance Capabilities → Alliance Innovation			0.327
Alliance Creativity → Alliance Innovation			0.252
Alliance Learning → Alliance Innovation			0.242
Alliance Innovation → Alliance Performance			0.362