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# Subjective trust, perceived risk and exchange performance in buyer-supplier relationships

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## Abstract

This article offers some theoretical and empirical contributions to the literature on relational exchange by examining the nature of subjective trust and perceived risk in buyer-supplier relationships. The relational view represents the theoretical framework for the research. The study explores the theoretical proposition that subjective trust and perceived risk in buyer-supplier relationships impact on exchange performance through the mediating effects of four sources of relational rents: asset specificity; knowledge-sharing routines; resource-capabilities complementarity, and effective governance. The theoretical model also considers the context influence in qualifying trust-risk interaction. The analysis of data from a sample of buyer-supplier relationships in the fashion industry by using a structural equation model provides support for the hypotheses. The results indicate that subjective trust and perceived risk are related constructs and play different roles in affecting exchange performance. The findings also highlight the critical role played by knowledge-sharing routine and resource-capabilities complementarity as full mediators in the relationships of subjective trust with exchange performance.

**Keywords:** subjective trust; perceived risk; relational view; exchange performance.

## 1 Introduction

Most literature associates trust and risk but their relationship is far from clear (e.g., Coleman, 1990). Trust becomes important in situations having high risk and uncertainty (Das and Teng, 1998). In light of the premise that trust presupposes a situation of risk (Luhmann, 1979), the extent of the relationship between the two constructs remains vague – and also problematic – in most research.

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Trust-risk linkage depends on the “situation” (Mayer, Davis, and Schoorman, 1995). In some contexts, such as industrial districts, this relationship seems clearer than in other contexts because of the custom of reciprocal cooperation and the geographical-cultural proximity among firms. Cooperation and proximity, in fact, increase the “normal” level of trust and reduce the demand for substitutes of trust itself (i.e., various forms of monitoring and safeguards) (Becattini, 2004). Equally, the custom of cooperation in a limited area – being a self-enforcing implicit code of behavior – has a positive effect in reducing the risk in economic exchanges (Dei Ottati, 1994).

The risk-based approach to trust is gaining increased interest mainly with reference to the inter-firm level of analysis (Ring and Van de Ven, 1994; Gambetta, 1988). Within this stream of research, a number of studies have been published on the impact of trust on exchange performance (e.g., Zaheer, McEvily, and Perrone, 1998) but very few empirical researches have explicitly included the concept of risk in the analysis.

The goal of this article is to provide some conceptual clarity on the topic by means of a three-fold approach.

Firstly, the study proposes a theoretical basis upon which trust and risk could be conceptualized as related but distinct constructs. In order to address the multidimensionality of both concepts, the study incorporates the Das and Teng (2004) perspective and considers the link between subjective trust and perceived risk. In this view, trust appears as “a mirror image of risk” (Das and Teng, 2004, p. 99). Thus, a high trust situation suggests low perceived risk and vice versa.

Secondly, the study explores a theoretical model that relates subjective trust and perceived risk to exchange performance. The main argument contained in this paper is that trust and risk impact on exchange performance through the mediating effect of four causal variables derived from the relational view: (1) asset specificity, (2) knowledge-sharing routines, (3) complementary resource-capabilities, and (4) effective governance (Dyer and Singh, 1998; Lavie, 2006). The study also considers the context influence in qualifying the trust-risk interaction through the inclusion of two control variables in the model.

Thirdly, the study empirically tests the theoretical model with survey data from a sample of 148 buyer-supplier inter-firm relationships in the fashion industry using a structural equation model.

The paper proceeds as follows. The next section describes the hypotheses against the backdrop of a focused literature review. Section 3 covers the discussion of the sampling and the operationalization of the variables. Sections 4 and 5 present the analysis and the empirical results, which are discussed and linked to previous researches. The final section contains limitations and directions for further research.

## **2 Theory and hypotheses**

### ***2.1 The risk-based view of trust***

The risk perspective has a prominent place in the extant literature on trust (Boon and Holmes, 1991; March and Shapira, 1987; Mayer et al., 1995; Sitkin and Pablo, 1992). Although considerable research in psychology and sociology focuses on the risk-based

view of trust in individuals (e.g., Currall and Judge, 1995) and in social groups (e.g., Kramer and Wei, 1999), in the organizational and interorganizational context the role of trust and risk has only recently attracted interest (e.g., Smith, Carroll, and Ashford, 1995). As a result of both of the different disciplinary lenses used to study the phenomenon and the inherent ambiguity of trust and risk constructs, there is currently a confusing assortment about these two principal issues: (a) the intrinsically complex and multifaceted nature of trust and risk definitions, and (b) the variety of units and levels of analysis to which trust and risk have been applied (Janowicz and Noorderhaven, 2006).

In addressing the first issue, the study considers three broad domains in the literature on the trust-risk linkage. The first generally includes the studies emphasizing that a risky situation creates the need for trust (e.g., Deutsch, 1958). The second domain includes research that recognized risk taking as a result of trust (e.g., McAllister, 1995). Finally, still another group of scholars believes that trust is essentially a subclass of risk, since both deal with uncertainty and probability (Coleman, 1990; Rousseau, Sitkin, Burt, and Camerer, 1998; Williamson, 1993). Within the third domain, Das and Teng (2004; 2001) stress the need to explicitly clarify and differentiate various conceptualizations of trust and risk. In fact, the term trust can actually refer to three altogether different concepts: (1) an expectation, (2) a behavioral outcome due to the expectation, and (3) personal and situational characteristics that lead to the expectation. Authors specifically use three explicit terms to avoid confusion on the aforementioned definitions: (1) subjective trust, (2) behavioral trust, and (3) trust antecedents. The three basic conceptions of trust lead to the development of three corresponding conceptualizations of risk: (1) perceived risk, (2) risk taking, and (3) risk propensity (Das and Teng, 2004, p. 97).

Given the focus on the buyer-supplier relationships, this study employs definitions of trust and risk that are inherently “relational” in order to explore the role of trust-risk link in interorganizational contexts. For this purpose, the study considers explicitly the link between subjective trust and perceived risk (Das and Teng, 2004). In this view, subjective trust appears as “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or [behavior] of another” (Rousseau et al., 1998, p. 395). Subjective trust may concern “a partner’s ability to perform according to agreements (competence trust) or his intentions to do so (goodwill trust)” (Nooteboom, 1996, p. 990). Equally, perceived risk appears as “the perceived probability of loss, as interpreted by a decision maker” (Rousseau et al., 1998, p. 395). This perceived risk definition both refers to the probability of a partner not fully committing to a relationship (i.e., relational risk) and to the probability of not achieving the goals in a relationship, given good intention, commitment, and efforts of the partner (i.e., performance risk) (Das and Teng, 2004).

The conceptualization of subjective trust as an expectation – thus as a subjective evaluation of probabilities – leads to assigning a salient role to perceived risk. The reason is that perceived risk is also the subjective estimation of probabilities under conditions of uncertainty (Slovic, 1987). However, the two concepts describe probability estimate with contrasting mentalities: while subjective trust refers to assessed probability of having desirable action performed by the trustee, perceived risk is assessed probability of not

having desirable results. Thus, “subjective trust and perceived risk are like mirror images of each other” (Das and Teng, 2004, p. 99). After all, they are related constructs evaluating the same situation from two distinctly different perspectives of hope and concern. Thus, the relationships between subjective trust and perceived risk is strictly inverse (2004, p. 100).

Because subjective trust and perceived risk are inversely related constructs, a high trust situation suggests low perceived risk. When perceived risk is low, the more efficient approach is to go forward with risk taking because its utility is higher. On the other hand, when subjective trust is low, risk is perceived as high. The more efficient approach here will be risk averting (again because of utility) (Das and Teng, 2004).

The second issue involved in this study concerns the level of analysis. The definitions of subjective trust and perceived risk adopted highlight the fact that the referent of trust and risk perception may vary. In other words, it is conceptually consistent to view subjective trust and perceived risk as being placed in (or toward) another individual or group of individuals such as the partner organization (contrary to what scholars say about the “origin” of the two concepts) (e.g., Adobor, 2005). Extending the intuitions of Zaheer et al. (1998), in this view subjective trust and perceived risk have their bases in individuals, although individuals in one organization may share an orientation toward another. From this perspective, subjective trust and perceived risk describe the extent to which organizational members have a collectively-held orientation toward the partner firm.

In sum, the foregoing arguments underlie the first hypothesis of the model. As mentioned, the focus of analysis is on buyer-supplier relationships.

**H<sub>1</sub>: Subjective trust and perceived risk in a buyer-supplier relationship have a negative and reciprocal relationship.**

## ***2.2 Subjective trust and perceived risk: the relational view perspective***

Dyer and Singh (1998) articulate the relational view of the firm, arguing that strategic relationships offer an alternative source of extraordinary economic rents. The starting point for this perspective is a criticism of both established approaches of industrial organization (Porter, 1980) and resource-based view (Barney, 1991). These strategic approaches analyze how firms gain above normal competitive advantage both ignoring the fact that the sources of this advantage are often “deeply embedded” within inter-firm relations (Dyer and Singh, 1998; Lavie, 2006; McEvily and Zaheer, 1999).

The underlying idea is that, in certain contexts, interorganizational relationships are more efficient institutional arrangements for achieving resource-based advantage than single firms. The notion of relational competitive advantage emerges from this view as “above normal profits or interorganizational quasi rents which are fundamentally generated in inter-firm relations” (Dyer and Singh, 1998, p. 661). Accordingly, they cannot be generated by one of the participating firms alone, but only within the scope of the joint, idiosyncratic contributions of the specific partners of cooperation. Relational rents generally arise from four potential sources: (1) asset specificity; (2) knowledge-sharing routines; (3) resource-capabilities complementarity; (4) effective governance mechanisms (1998, p. 662).

Relations-specific assets are general tangible and intangible assets that partner firms converted for a specific and unique purpose to a given relationship (Amit and Schoemaker, 1993). Williamson (1985) suggests three types of specificity: site specificity, physical asset specificity and human asset specificity. The first can be achieved by the fact that sequential stages of value chains are placed spatially close to each other (Dyer, 1997). Physical asset specificity refers to transaction-specific capital investments that tailor processes to specific exchange partners. Relational human asset specificity sets in when, for example, cooperating partners gain mutual experience in specific production stages and thereby establish a more efficient communication structures (Fink and Kessler, 2010).

Knowledge-sharing routines primarily concern the sustainable learning or problem-solving capacities of cooperating firms necessary for achieving relational rents. They are the processes governing the inter-partner sharing of information and, according to prior research, have a strong relationship with competitive advantage and innovation (Powell, Koput and Smith-Doerr, 1996). A partner-specific absorptive capacity as well as incentives for transparency of knowledge stocks and processes against “free riding” facilitate the creation of inter-firm knowledge-sharing routines (Mowery, Oxley and Silverman, 2002).

Complementary resources and capabilities occur when partners possess resources that collectively generate greater rents than the sum of those obtained from the individual resource endowments of each partner (Kale, Singh and Perlmutter, 2000). Such a relationally generated resource endowment is possible due to a specific combination of the already present resource stocks (Gulati, 1999).

Finally, an effective governance structure represents an important element of achievement in relational competitive advantage. Protection against opportunism is seen as a central component of an effective governance structure of inter-firm relations (Dyer, 1997). According to transaction cost theory, various contractual modes are basically available for avoiding opportunism such as, for example, amicable settlements which are directed at the maintenance and continuity of relations. Especially forceful for preventing the danger of opportunism is the ability to utilize self-enforcement governance mechanisms and informal self-enforcement governance structures, in particular which mainly contribute towards building trust among partners (Duschek, 2004; Prior, 2006).

Given this perspective, one may argue that subjective trust may positively impact on all the four sources of relational rents. In fact, the greater the extent of subjective trust between partners is, the greater the willingness to create relation-specific investments and interorganizational knowledge-sharing routines will be (Squire, Cousins and Brown, 2009). The reasoning is that a high extent of trust between firms increases the degree of bilateral disclosure and encourages the openness in the relationship (Sriram, Krapfel, and Spekman, 1992). This element in turn facilitates the leveraging of complementary resource endowments, improves the firms’ ability to recognize potential for resource synergies and increases the degree of compatibility in firms’ organizational systems, processes and cultures (Doz, 1996). Finally, a wide literature underlies the role of (subjective) trust as a mechanism of governance: trust serves as an effective social control mechanism, obviating the need for hierarchical controls in the face of potential moral hazard (Gao, Sirgy, and Bird, 2005; Gulati, 1995; Ring and Van de Ven, 1992).

Assessing the theoretical foundation of trust-risk linkage, the study recognizes that a high extent of perceived risk in inter-firm relationships negatively affects the exploitation of the four key sources of relational advantage. In fact, partners involved in high-risk relationships will be less willing to invest in specific assets and to share knowledge and interorganizational knowledge-sharing routines due to the fear of knowledge misappropriation (Hallikas, Puumalainen, Vesterinen, and Virolainen, 2005). In addition, they create barriers to protect themselves against uncertainty and opportunism reducing both the possibility to combine complementary resources and to employ effective governance mechanisms that lower transaction costs (Das and Teng, 1996).

**H<sub>2</sub>: Subjective trust relates positively to each of the relational view variables (specific assets, knowledge-sharing routines, resource-capabilities complementarity, and effective governance) in a buyer-supplier relationship.**

**H<sub>3</sub>: Perceived risk relates negatively to each of the relational view variables (specific assets, knowledge-sharing routines, resource-capabilities complementarity, and effective governance) in a buyer-supplier relationship.**

The relational view suggests that relationship-specific assets, partner-specific knowledge-sharing routines, resource-capabilities complementarity, and effective governance mechanisms all offer positive contributions to exchange performance (Dyer and Singh, 1998).

**H<sub>4</sub>: Specific assets, knowledge-sharing routines, resource-capabilities complementarity, and effective governance relate positively to exchange performance in a buyer-supplier relationship.**

### ***2.3 Control variables: duration and distance***

The extent of subjective trust and perceived risk in a buyer-supplier relationship depends on the context (Mayer et al., 1995). In some contexts the trust-risk dynamics assume peculiar nuances and intensity such as within the industrial district (Bellandi, 2002).

The industrial district is “a socio-territorial entity which is characterized by the active presence of both a community of people and a population of [specialized] firms in one naturally and historically bounded area” (Becattini, 1990, p. 38). In this organizational model people and firms tend to merge. The common culture (i.e., values, ways of behaviour, expectations) and the norms of reciprocity accompanied by relevant social sanctions impact on the economic environment (Dei Ottati, 1994).

The socioeconomic environment of the district promotes the building up of trust-based relations arisen from reciprocal customs of cooperation, personal reputation and cultural proximity. Proximity and cooperation also reduce the level of perceived risk among district partners as they combine the effect of social norm and economic incentives. In fact, the widespread development of direct and repeated contacts between agents operating permanently in the same area – and sharing the same culture – allow to observe, interpret

and record the behavior of the exchange partner as well as make it possible to foresee the partner intention and commitment. Prior research demonstrates that this possibility in turn brings about a similar reduction in the degree of trust – and a similar increase in the degree of perceived risk – of district members towards people/firms outside the district (so called “district effect”) (e.g., Bellandi, 2002). Given the importance of these remarks, the study considers in the theoretical model the effects of custom of cooperation and distance in order to verify whether and how the context impact on the trust-risk dynamics.

With reference to custom of cooperation, one may argue that partners in a long-lasting relationship have had enough time to develop mutual understanding, and thus conflicts that hamper relationship performance may be less likely (Martin, Swaminathan, and Mitchell, 1998). Thus, duration of relationship could be employed as a proxy of custom of cooperation (Krishnan, Martin, and Noorderhaven, 2006).

Prior research recognizes that (cultural and geographical) distance impacts on various factors in economic exchange such as on the perception of trust and the exchange performance (e.g., Pothukuchi, Damanpour, Choi, Chen, and Park, 2002). Following this insight, the theoretical model here presented controls for cultural distance by using the Kogut and Singh (1988) measure. They developed a composite index of cultural distance based on the deviation along the first four dimensions of Hofstede’s (1983) framework. The study adopts the Kogut and Singh’s formula to compute the distance between Italian national culture and that of the country of origin of each foreign partner. In addition, the model mixes the cultural measure with a specific measure of geographical distance.

The arguments consider the two elements of the transaction context (duration and distance) as impacting on the structuring of the buyer-supplier relationship and on the performance of the economic exchange. They appear in the theoretical model as control variables without hypothesizing specific relationships between these constructs.

### **3 Methods**

#### **3.1 Data**

Data on exchange relationships of fashion district manufacturers and their suppliers were gathered in four phases.

In the first phase an original group of manufacturing firms in the Macerata fashion district was constructed. This district was selected because it contains a wide range of both local and international purchasing arrangements and provides a sampling frame of adequate size. Also, it is known as the largest concentration of producers of shoes and accessories in Europe. A list of purchasing managers in the selected firms was drawn up. Extensive semi-structured interviews, each 45 minutes to one hour long, were held with 9 purchasing managers from different firms in the district.

In the second phase, 36 district leading firms who were eligible to participate in the study were identified. The selection criteria of the leading firms are as follows: (1) the firms purchase both locally (within the district) and internationally components or services; (2) they deal directly with supplier firms; and (3) they have had purchasing relationships with at least five suppliers for over two years. The district leading firms are those in charge of

high value-added activities within the fashion supply chain (mostly product design). They are often manufacturing firms which manage their supply network well beyond the district borders, mainly offshoring the lower value-added activities and/or more labor-intensive phases. These firms received an e-mail requesting their participation in the study. The purchasing managers were also asked to identify a specific group of supplier firms that provide their firm with some key components or services for the final products (i.e., strategic suppliers). By “strategic” the study refers specifically to the sourcing of products that are strategic in terms of both complexity of the supply market and importance to the organization as defined by Kraljic (1983).

To control for potentially confounding effects on relational governance caused by the importance of a supplier and by the amount of purchases made from it, the purchasing managers were requested to select a number from five to ten of their strategic suppliers and to identify a specific individual (i.e., the individual counterpart) with whom they have been dealing personally for each supplier firm. The procedure of selecting more than five of the strategic suppliers mitigates social desirability bias, which is sometimes present in questionnaire research (Anderson and Narus, 1990). A total of 17 district leading firms agreed to participate and sent the requested information about 151 suppliers.

In order to address concerns about single-firm bias in research on buyer-supplier relations, data from supplier individual counterparts within the partner firms were also collected. A total of 41 supplier firms agreed to participate and sent the requested information.

The study employed the Dyer and Chu (2000) method and relied on a single key informant in each firm for two main reasons. First, this choice increases participation (Glick, Huber, Miller, Doty, and Sutcliffe, 1990). Second, as Cullen, Johnson, and Sakano (1995) suggest, the single key informants do not add any systematic bias or greater perceptual errors than multiple respondents do. Kumar, Stern, and Anderson (1993) recommend that the most knowledgeable individual be identified as a respondent in survey research. The study closely followed those recommendations.

### ***3.2 Testing for non-response bias***

The participation rate of approximately 47% (i.e., 17/36) is somewhat high and doesn't suggest the potential for non-response bias. However, a telephone survey of 5 randomly selected non participants was conducted in order to discard any systematic differences between the resulted sample and the rest of the population. A statistical test was conducted to verify if the sample was representative enough, following Armstrong and Overton (1977) indications. A comparison between two samples of early respondents and late respondents by using a *t*-tests on the key variables revealed that no significant differences exist.

### ***3.3 Questionnaires***

To increase the reliability and validity of the measures, two separate questionnaires were developed on the basis of the semi-structured interviews and previous research: one for the purchasing managers and another for a second respondent in the supplier firm. The second

questionnaire was identical to that for the purchasing managers with the exception that all the references to “supplier” were replaced by “customer” ones.

In the third phase of the data collection, the first questionnaire was mailed to the 17 district leading firms asking them to consider one questionnaire for each supplier identified. The second questionnaire was also mailed to the 151 selected suppliers. In the final phase of the data collection the study implemented Dilman’s (1978) techniques for maximizing the response rate with follow-up correspondence, questionnaires, and telephone calls.

148 respondents replied for a final response rate of 49% of the individuals eligible and willing to participate (148/302). Of the 148 completed questionnaires received, 107 were from purchasing managers and 41 were from the second respondent in the supplier organization.

### **3.4 Measures**

Appendix A reports on the details of the measurement items and scales used to operationalize the theoretical constructs. Where available, the study uses measurement instruments from the literature to develop constructs. Some items are modified to reflect the specific context of the study. The Cronbach alpha reliability value for each construct is also reported in Table 1. The reliability values of the measurement scales all exceed the recommended value of 0,70 (Nunnally, 1978) with the exception of that for the perceived risk construct, which is marginal at 0,69. Details of the development of the constructs are as follows.

*Subjective trust.* To develop measures of subjective trust the study relies primarily on a measurement instrument created and validated by Doney and Cannon (1997). Following the suggestions of Seppänen, Blomqvist and Sundqvist (2007), this measurement instrument was chosen because it was designed specifically to tap trust in buyer-supplier relationships rather than a more general trusting orientation. Also, the scale by Doney and Cannon (1997) seems to be the most relevant as it relates to trust as a subjective evaluation of a partner firm (i.e., the buyer) in another (i.e., the supplier). This scale also contains items corresponding to both the two form of subjective trust (i.e., competence and goodwill trust). After a comparison with other relevant scales (e.g., Nooteboom, Berger, and Noorderhaven, 1997; Zaheer et al., 1998) it was deemed that the chosen measurement scale was the most appropriate for this study on the basis of relevance, parsimony, reliability and validity.

*Perceived risk.* To develop a measure of perceived risk consistent with the theoretical conceptualization, the study primarily relies on the Wagner and Bode (2006) measurement instrument. They specifically created this measure to capture the perceived risk in supply relationships as a subjective evaluation of probabilities of loss developed by a partner towards another. However, not all of the Wagner and Bode original items were applicable to the research context. Particularly, items measuring the perceived risk that lies either in the environment (e.g., intensified competition or adverse regulation) or in the capabilities of third-party service providers (e.g., logistics service providers) were excluded and replaced by three items measuring the perceived relational risk that lies in conscious intention of a specific partner. In this way, the scale explicitly represents both the two forms of perceived

risk (i.e., performance and relational). Then, the scale was adapted for use in the study context by altering the referent of perceived risk (which is “supplier x”).

*Asset specificity.* Williamson (1985) indentified site, physical and human asset specificity as distinct types of transaction-specific investments. The measure of each was included in the model adapting Heide and John’s (1990) operationalization. A four-item scale was developed to reflect asset specificity construct.

*Knowledge-sharing routines.* Knowledge-sharing routines are measured based on two-item constructs adapted from Kwon and Suh (2004). These measures were developed in order to evaluate the extent and the relevance of knowledge-sharing practices in buyer-supplier relationships.

*Complementary resource-capabilities.* The partners complementarity is measured on a two-item scale reflecting the degree of organizational integration and the extent to which the exchange activities are carried out in a cooperative and coordinated manner (Lin and Chen, 2006).

*Effective governance.* To develop measures of effective governance mechanisms the study relies primarily on a measurement instrument validated by Dyer (1997). Four items were incorporated in the model to reflect the governance construct.

*Performance.* Following Zaheer et al. (1998), the performance construct is operationalized by using a three-item scale reflecting the degree to which the partner organization fulfilled the goal of competitive price, timeliness of delivery and high quality supply (Heide and Stump, 1995). The operationalization is based on the reasoning that “the less cooperative the supplier is in meeting the buyer’s need, the higher the transaction costs the buyer incurs in trying to achieve its goals in the supply relationship” (Walker, 1994, p. 583).

*Duration.* Following extant literature, duration of relationship is measured by an item capturing the number of years a relationship had been in existence at the time of measurement (e.g., Kotabe, Martin, and Domoto, 2003).

*Distance.* Distance is treated as a second-order construct, incorporating both geographical and cultural distance. The model controls for geographical distance by an item capturing the kilometers between the partners’ central office/plants. Cultural distance is operationalized by using Kogut and Singh’s (1988) measure.

#### **4 Analysis**

The study uses the estimation procedure of Mplus 5.21 (Muthén and Muthén, 1998-2007) to construct a structural equation model (SEM) testing the hypotheses. The structural model describes three types of relationships in one set of multivariate regression equations: the relationships among factors, the relationships among observed variables and the relationships between factors and observed variables that are not factor indicators.

The adopted technique has the advantage over standard regression analysis of explicitly considering the measurement error in the indicators and simultaneously estimating a system of structural equations. However, researchers have underlined the difficulty of fitting SEM models with a large number of items per latent variable (Williams and Hazer, 1986).

Because of the complexity of the presented conceptual model and the relatively large number of manifest variables, particularly for the subjective trust and perceived risk constructs, this study uses the partial aggregation model described by Bagozzi and Heatherton (1994). The partial aggregation approach addresses this modelling problem by consolidating the manifest items of a latent variable into a smaller number of composite indicators.

To construct the composite indicators, the study first evaluated each construct for unidimensionality using factor analysis (Williams and James, 1994). Consequently, each construct item was ranked according to its loading and assigned to the new indicators. The number of composite indicators for each latent variable considers the amount of cumulative variance of the original data being more than 0,80. This choice avoided the lost of essential insight in further analysis and allowed the achievement of parsimony and clarity in the structure of the relationships. The mean of the items assigned to each indicator became the value for the indicator. The indicators then converged onto the respective latent variable in the measurement model.

Means, standard deviations and zero-order correlations for the composite indicators appear in Table 1, and the loadings of composite indicators on latent variables appear in Table 2. The study handles possible non-normality by using maximum likelihood estimation procedures implemented in Mplus 5.21 software (Muthén and Muthén, 1998-2007).

#### ***4.1 Convergent and discriminant validity***

Convergent validity is the extent to which different attempts to measure a construct agree (Campbell and Fiske, 1959). In organizational research, “different methods” are often taken to mean obtaining reports from independent and qualified respondents. This study assesses convergent validity by examining the correlation between subjective trust indicators as reported by the first respondent in the purchasing organization and by the second respondent in the supplier organization.

The correlation between subjective trust measured by the two respondents (methods) is 0.71 ( $t = 3.89$ ,  $p < 0.01$ ). The same test performed with reference to perceived risk indicators showed a correlation of 0.69 ( $t = 3.24$ ,  $p < 0.01$ ). These positive and significant correlations provide adequate evidence for the convergent validity of subjective trust and perceived risk constructs.

A series of chi-square difference tests on the factor correlations assured the achievement of discriminant validity – the extent to which a construct differs from others – for the constructs: subjective trust and perceived risk (Bagozzi, 1993). The study tested for discriminant validity by comparing a model with the correlation between the two constructs constrained to equal one with an unconstrained model. A significant lower chi-square value for the model with the unconstrained correlation provides support for discriminant validity (Jöreskog, 1971). The achievement of discriminant validity between the constructs of subjective trust and perceived risk is particularly important for two main reasons: firstly, these two variables are the focal latent constructs within the model; secondly, the model

conceptualizes subjective trust and perceived risk as theoretically distinct but related constructs.

**Table 1. Descriptive Statistics and Zero-Order Correlations Constructs**

	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable 1	0.69	0.28	1																			
Variable 2	0.66	0.16	-0.03	1																		
Variable 3	0.76	0.13	0.03	0.00	1																	
Variable 4	1.11	0.66	-0.48	0.17	-0.14	1																
Variable 5	2.77	1.87	-0.33	0.01	-0.04	0.33	1															
Variable 6	1.30	1.47	-0.53	0.18	0.10	0.46	0.39	1														
Variable 7	0.62	0.44	-0.20	0.10	0.06	0.27	0.22	0.24	1													
Variable 8	0.30	0.19	-0.10	0.05	0.05	0.13	0.18	-0.12	0.00	1												
Variable 9	0.59	0.24	0.18	-0.04	0.00	-0.29	-0.49	-0.50	-0.35	-0.19	1											
Variable 10	0.56	0.28	0.20	-0.01	-0.05	-0.31	-0.26	-0.53	-0.12	-0.07	0.28	1										
Variable 11	0.56	0.24	0.28	-0.18	0.08	-0.53	-0.58	-0.48	-0.64	0.10	0.33	0.45	1									
Variable 12	0.58	0.26	0.43	-0.15	0.06	-0.51	-0.53	-0.43	-0.37	-0.06	0.32	0.36	0.39	1								
Variable 13	0.64	0.75	-0.17	0.06	-0.06	0.16	0.20	0.56	0.16	0.17	-0.62	-0.27	-0.55	-0.52	1							
Variable 14	0.37	0.16	0.29	-0.14	-0.33	-0.15	-0.01	-0.57	-0.33	0.28	0.16	0.24	0.27	0.15	0.00	1						
Variable 15	0.92	0.57	0.33	-0.06	0.09	-0.38	-0.48	-0.21	-0.26	-0.20	0.66	0.28	0.28	0.26	-0.29	0.14	1					
Variable 16	0.96	0.66	0.22	-0.06	0.09	-0.26	-0.17	-0.20	-0.23	-0.23	0.47	0.45	0.55	0.52	-0.49	0.10	0.15	1				
Variable 17	0.95	0.59	0.24	-0.07	0.08	-0.47	-0.46	-0.15	-0.17	-0.20	0.28	0.38	0.58	0.55	-0.29	0.13	0.25	0.36	1			
Variable 18	0.34	0.74	0.19	0.06	-0.04	-0.20	-0.17	-0.25	-0.27	0.06	0.14	0.10	0.11	0.08	-0.25	0.04	0.23	0.24	0.25	1		
Variable 19	2.25	3.55	-0.24	0.01	0.01	0.18	0.12	0.20	0.20	0.05	-0.11	-0.05	-0.07	-0.07	0.20	0.00	-0.21	-0.22	-0.23	-0.27	1	
Variable 20	8.26	5.92	0.46	0.00	-0.04	-0.47	-0.59	-0.38	-0.52	-0.13	0.49	0.47	0.29	0.29	-0.56	0.05	0.27	0.20	0.38	0.28	-0.27	1

Note: N = 148; correlations greater than 0.14 or less -0.14 are significant at the 0.05 level

Legend: Variable 1-3 = Subjective trust; Variable 4-6 = Perceived risk; Variable 7-8 = Asset specificity; Variable 9-10 = Knowledge-sharing routines; Variable 11-12 = complementarity; Variable 13-14 = Effective Governance; Variable 15-17= Performance; Variable 18 = Geographic distance; Variable 19 = Cultural distance; Variable 20 = Duration.

**Table 2. Parameter Estimates for Structural Model**

	Parameter estimates (std)	t-value
Subjective Trust by V1	0.94	fixed parameter
Subjective Trust by V2	-0.12	-1.52
Subjective Trust by V3	0.05	0.66**
Perceived risk by V4	0.58	fixed parameter
Perceived risk by V5	0.79	11.54**
Perceived risk by V6	0.71	8.03**
Asset specificity by V7	0.61	fixed parameter
Asset specificity by V8	1.12	3.70
Knowledge-sharing routines by V9	0.79	fixed parameter
Knowledge-sharing routines by V10	0.85	4.03**
Resource Complementarity by V11	0.85	fixed parameter
Resource Complementarity by V12	0.80	8.97**
Effective Governance by V13	0.05	fixed parameter
Effective Governance by V14	-0.01	-0.02
Performance by V15	0.97	fixed parameter
Performance by V16	0.98	5.32**
Performance by V17	0.88	7.11**
Distance by V18	0.21	fixed parameter
Distance by V19	0.79	4.26**
Subjective Trust – Perceived risk	-0.71	-6.64**
Subjective Trust – Asset specificity	0.03	0.24
Subjective Trust – Knowledge-sharing routines	0.80	0.06**
Subjective Trust – Resource Complementarity	0.86	0.07**
Subjective Trust – Effective Governance	-1.56	-0.02
Perceived risk – Asset specificity	-0.06	-0.12
Perceived risk – Knowledge-sharing routines	-0.05	-0.05
Perceived risk – Resource Complementarity	0.12	0.06*
Perceived risk – Effective Governance	0.45	0.02
Asset specificity – Performance	-0.21	-0.10
Knowledge-sharing routines – Performance	0.87	3.23**
Resource Complementarity – Performance	0.75	3.17**
Effective Governance - Performance	0.04	0.17
Subjective Trust – Performance	0.84	0.12**
Perceived risk – Performance	-0.22	-0.05**
Subjective Trust – Distance	0.10	1.38*
Subjective Trust – Duration	0.57	0.05***
Perceived risk – Distance	-0.15	-0.47*
Perceived risk – Duration	-0.68	-12.4***

Notes: «by» means «measured by»; «-» means interrelations.

\*p<0,01

\*\*p<0,01

\*\*\*p<0,001

## 5 Results

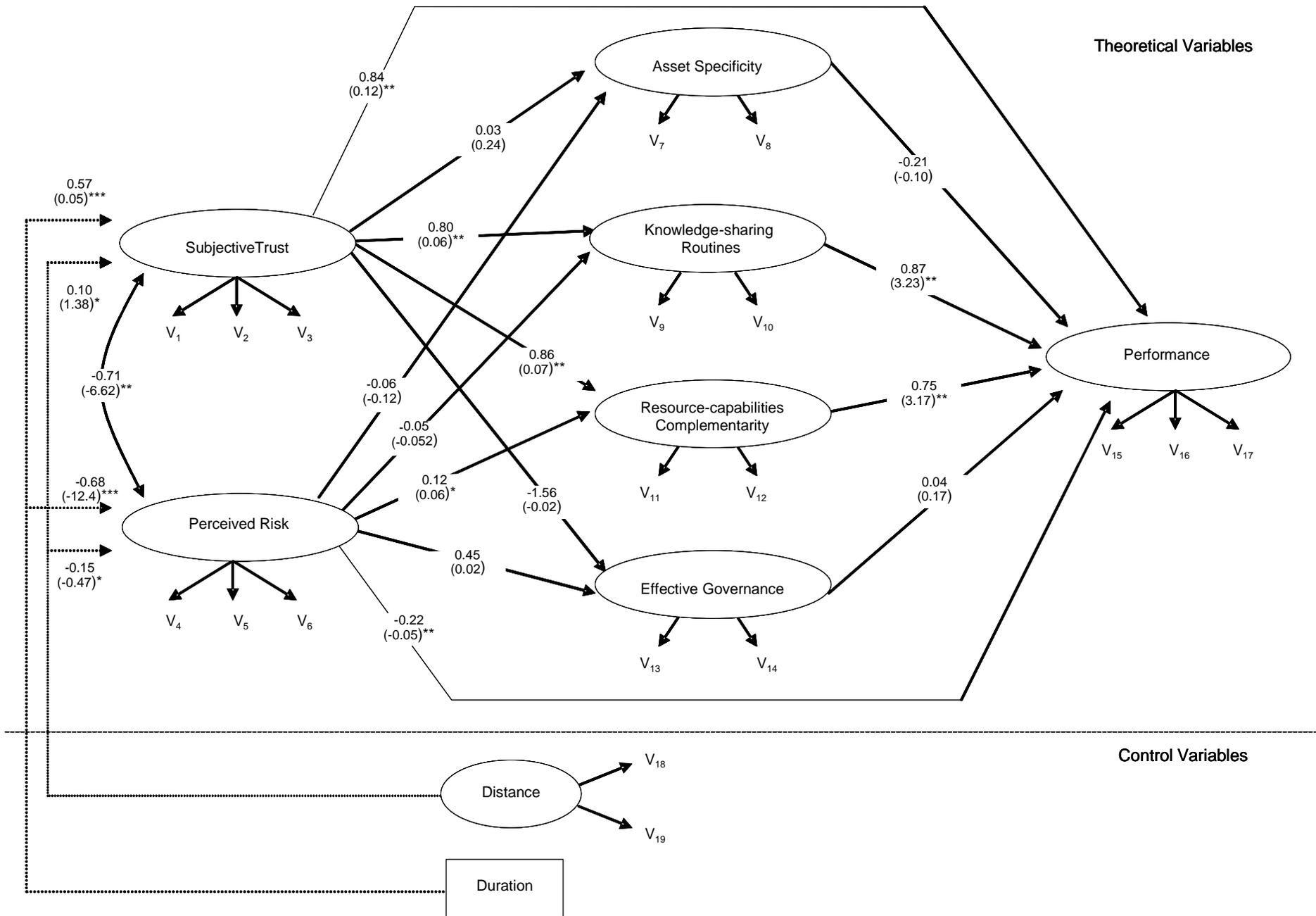
The structural equation model expresses the relationships between subjective trust, perceived risk and performance, mediated by relational view variables and with controls for distance and duration of the relationships. Following previous research (Venkatraman, 1989; Zaheer et al., 1998), the study tests for mediated relationships by specifying two additional direct paths along with the mediation paths. The direct path linking subjective trust and performance aims to verify the mediation effect of the four relational view variables. The same pattern of structural paths is specified for the hypothesized mediated relationship between perceived risk and performance. Goodness-of-fit statistics for this model suggest an acceptable fit to the data:  $\chi^2$  (394 df) of 721 ( $p < 0.001$ ); CFI = 0.94; TLI = 0.95; RMSEA = 0.05. Although the chi-square value is significant, this might be expected due to this test statistic's sensitivity to sample size and other elements (Yu, 2002).

To test hypotheses 1 through 4 of the model, the study relies on correlation coefficients estimated by the Mplus structural modeling procedure. The model consists of eight latent variables and twenty manifest variables. The statistical significance of the path coefficients provides tests of the hypotheses (Figure 1).

According to Hypothesis 1, subjective trust and perceived risk have a negative and reciprocal relationship ( $-0.71$ ;  $t = -6.62$ ;  $p < 0.01$ ). The moderately high correlation coefficient suggests that the two constructs are conceptually and empirically distinct.

The findings partially support Hypothesis 2, predicting a positive relationship between subjective trust and each of the four relational view variables (asset specificity, knowledge-sharing routines, resource-capabilities complementarity and effective governance). In fact, subjective trust does not positively relate either to asset specificity ( $0.03$ ;  $t = 0.24$ ; n.s.) or to effective governance ( $-1.56$ ;  $t = -0.02$ ; n.s.). On the contrary, the results strongly support the positive relationship between subjective trust and knowledge-sharing routines ( $0.80$ ;  $t = 0.06$ ;  $p < 0.01$ ). Equally, the analysis confirms that the link between subjective trust and complementarity is positive and statistically significant ( $0.86$ ;  $t = 0.07$ ;  $p < 0.01$ ).

The study does not support Hypothesis 3, predicting a negative relationship between perceived risk and each of the relational view variables. In fact, the findings do not confirm either the negative link between perceived risk and asset specificity ( $-0.06$ ;  $t = -0.12$ ; n.s.) or the negative link between perceived risk and knowledge-sharing routines ( $-0.05$ ;  $t = -0.05$ ; n.s.). The study does not support the hypothesized negative link between perceived risk and effective governance ( $0.45$ ;  $t = 0.02$ ; n.s.). Contrary to the hypothesis, the results show that the link between perceived risk and complementarity is positive and statistically significant ( $0.12$ ;  $t = 0.06$ ;  $p < 0.10$ ).



Notes: N = 148; t-value in parentheses. For clarity, error not shown.

The results partially confirm Hypothesis 4, predicting a positive relationship among the four relational view variables and exchange performance. As predicted, knowledge-sharing routine and performance have a positive relationship ( $0.87; t = 3.23; p < 0.01$ ) as well as complementarity and performance ( $0.75; t = 3.17; p < 0.05$ ). Contrary to the hypothesis, the study supports neither the positive link between asset specificity and performance ( $-0.21; t = -0.10; n.s.$ ) nor the positive link between effective governance and performance ( $0.04; t = 0.17; n.s.$ ).

Finally, the outcomes confirm that the direct path from subjective trust to performance is positive and statistically significant ( $0.84; t = 0.12; p < 0.01$ ). On the contrary, the results do not support the negative direct path from perceived risk to performance although the link is statistically significant ( $-0.22; t = -0.05; p < 0.01$ ).

## **6 Discussion**

This paper examines the relationships among subjective trust, perceived risk and exchange performance, making use of relational view perspective.

At first blush, the results support the thesis that subjective trust and perceived risk are related constructs. Rather, the negative correlation between the two constructs seems to confirm that a perception of low subjective trust implies a perception of high risk and vice versa. This finding seems to be not merely an artifact of single-source bias given that the study used data from both buying and supplying firm respondents to test the relationship.

With reference to the relationship between subjective trust and the relational view variables, the results provide strong support for the links between subjective trust and knowledge-sharing routines such as for the link between subjective trust and complementarity. The outcomes confirm that a high extent of subjective trust stimulates the cooperating firms to share routines and knowledge in order to enhance sustainable learning or problem solving capacities. Further, the results support the thesis that, in buyer-supplier relations, subjective trust positively impacts on the capacity to combine the relationally generated resource endowments of each partner.

Subjective trust does not relate to asset specificity and effective governance. The first outcome could be explained considering the influence of the context of analysis: in fact, firms operating in fashion districts need to face turbulent markets with short life-cycles, high volatility and low predictability (Christopher et al., 2004). In addition, most of the activities have a low level of automation and are not much affected by economies of scale. In such a business, need for flexibility plays a key role in reducing the propensity to invest in specific (tangible and intangible) assets that strictly tailor processes to specific exchange partners. This result appears also in relationships with high perceived subjective trust.

With reference to the effective governance construct, a possible explanation of the missing link to subjective trust could involve the impact of supply chains internationalization. In fact, the internationalization of supply network challenges the

traditional governance approach of district firms – mainly based on informal mechanisms – and seems to stimulate the adoption of new rules and practices (mainly formal ones) for managing relationships (Cerruti, Delbufalo, 2010). More than 49% of the relationships considered in the research sample concerns international relationships between Italian district firm and foreign partner. In such situations, the high extent of subjective trust could be offset by the adoption of formal (contractual) safeguards developed to minimize transaction costs and opportunism (higher in international relationships) (Boersma, Buckley, and Ghauri, 2003).

The findings do not support the hypothesis about the negative link between perceived risk and relational view variables. A possible theoretical explanation of this outcome could involve the conceptualization of perceived risk adopted. The research refers to two different form of perceived risk (i.e., performance risk and relational risk). This taxonomy is specifically designed to analyze supply inter-firm relationships and doesn't incorporate all the dimensions of risk such as financial risk and environmental risk. In addition, the findings provide a clear indication that other factors are relevant for the investigated relationships; for example, the results could be different with the inclusion in the model of interdependence and control constructs as conditions that influence the perception of risk concerning an exchange partner (Nooteboom et al., 1997).

The findings partially support the hypothesis about the links between performance and the four relational view variables. Although subjective trust is related strongly to knowledge-sharing routines and complementarity in the relationship, asset specificity and effective governance do not mediate the link between trust and performance, contrary to what the study hypothesized. In addition, although the research did not hypothesize a direct effect of trust on performance, the empirical results in fact reveal a direct link between the two constructs which confirms the strong theoretical rationale in the organizational economics literature about this concern (Krishnan et al., 2006; Zaheer et al., 2008). These outcomes are consistent with recent studies suggesting that the impact of trust on a inter-firm performance may be contingent on different factors. Yet previous research does not yield a general theory regarding the conditions under which trust facilitates or fails to facilitate exchange performance. This paper expresses such a conceptual perspective developed on the relational view and shows empirically that, apart from the positive direct relationship between subjective trust and performance, more subtle interaction effects appear with regards to knowledge-sharing routines and complementarity.

On the contrary, the empirical results do not support the direct relationship between perceived risk and performance even though the relationship is negative and statistically significant. Different reasons could explain this point. For example, a firm could consider the exchange relationship risky even in the case of good partner performance because of the high extent of environmental constraints or relationship internal tensions (Das and Teng, 2001).

Finally, the findings are interesting also with reference to the variables used in the model to control trust-risk relationships. These control variables express the context

influence on the relational exchange and underline how much district externalities (related to distance and duration) matter in qualifying trust-risk interaction. Even if these concerns represent a corollary of this analysis, their consideration provides the opportunity for a number of possibilities for future research. In this study, the empirical outcomes do not confirm the negative relationship between subjective trust and both geographical and cultural distance. The study also does not support the positive relationship between perceived risk and distance. On the contrary, moderated support appears for the relationship between subjective trust and duration and for the relationship between perceived risk and duration. Although the small sample size and the extent of the analysis do not allow for any kind of generalization, one may argue that the “district effect” seems to be not impacting significantly on trust-risk interaction as hypothesized with regards to distance constructs. Additional research efforts could expand the analysis deeper on whether and how the effect of duration – expressing custom of cooperation – appears to compensate for high geographical and cultural distance between partners.

## **7. Limitation and suggestions for future research**

This study makes some theoretical and empirical contributions to the literature on relational exchange by examining the nature of subjective trust and perceived risk in buyer-supplier relationships. Although associating with each other, these constructs relate differently to asset specificity, knowledge-sharing routines, resource-capabilities complementarity, and effective governance. In particular, the findings highlight the critical role played by knowledge-sharing routine and resource-capabilities complementarity as full mediators in the relationships of subjective trust with exchange performance.

However, as all empirical researches, the study has limitations. Firstly, the small sample size and the narrow context of analysis reduce the validity of the implied causal links of the model. The cross-sectional nature of the research design also restricts the validity of the study. Since the research design revolves around one point in the time data stream, future efforts should also develop a test of hypotheses in a longitudinal perspective. Investigation of the findings based on in-depth case studies would also enhance the understanding of how subjective trust builds up over time and its dynamic relationships with perceived risk.

Secondly, the operationalization of the constructs does not preclude other sources mainly with regard to the trust and risk variables. In addition, this study infers from a specific buyer-supplier setting to interorganizational relationships more generally (e.g., Zaheer et al., 1998). Thus, future research should replicate the analysis in other contexts or in other inter-firm settings (e.g., strategic alliances) in order to establish the external validity of the theoretical model.

Finally, future studies could expand the understanding of the relationship between trust and risk by addressing different views of the phenomenon and by considering other

variables. As in similar research (e.g., Zaheer et al., 1998), in seeking of simplicity this study only considers subjective trust and perceived risk as unidimensional constructs. Future research could expand this view by further exploring the relationship between competence trust and performance risk as well as the relationship between goodwill trust and relational risk. In addition, future research could examine the link between trust propensity and risk propensity and/or the link between behavioral trust and risk taking (Das and Teng, 2004).

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## Appendix A. Measurement Instruments

Measures and Items	Internal Consistency Reliability ( $\alpha$ )	Source
<p><i>Subjective Trust</i></p> <ol style="list-style-type: none"> <li>1. Supplier x keeps promises it makes to our firm</li> <li>2. Supplier x is not always honest with us (R)</li> <li>3. We believe the information that supplier x provides us</li> <li>4. Supplier x is genuinely concerned that our business succeeds</li> <li>5. When making important decisions, supplier x considers our welfare as well as its own</li> <li>6. We trust supplier x keeps our best interests in mind</li> <li>7. Supplier x is trustworthy</li> <li>8. We find it necessary to be cautious with supplier x (R)</li> </ol> <p>(1=strongly disagree, 5=strongly agree)</p>	0.92	Adapted from Doney and Cannon (1997)
<p><i>Perceived risk</i></p> <p><i>Based on a two-year past experience, to what extent does your firm expect to experience a negative impact in supply chain management due to ...</i></p> <ol style="list-style-type: none"> <li>1. Insufficient or distorted information from supplier x</li> <li>2. Supplier x quality problems</li> <li>3. Capacity fluctuations or shortages in the supply relationship with partner x</li> <li>4. Poor logistics performance of supplier x (e.g., delivery dependability, order fill capacity)</li> </ol> <p>(1=very low impact, 5=very high impact)</p> <ol style="list-style-type: none"> <li>5. Our business information is at risk of being stolen by supplier x in the relationship</li> <li>6. The possible change of supplier x will lead to a high risk in our business</li> <li>7. Supplier x is likely not to invest completely complying with the agreement</li> </ol> <p>(1=strongly disagree, 5=strongly agree)</p>	0.69	Adapted from Wagner and Bode (2006)
<p><i>Asset specificity</i></p> <ol style="list-style-type: none"> <li>1. Our production system has been tailored to meet the requirements of dealing with supplier x</li> <li>2. Gearing up to deal with supplier x requires highly specialized staff and procedures</li> <li>3. Our production system and plant have been located spatially close to those of supplier x</li> <li>4. We have made significant investments in equipment and staff dedicated to our relationship with supplier x</li> </ol> <p>(1=strongly disagree, 5=strongly agree)</p>	0.86	Adapted from Heide and John (1990)
<p><i>Knowledge-sharing routines</i></p> <ol style="list-style-type: none"> <li>1. Your firm shares a common information technology software to facilitate communication with the partner</li> <li>2. Information and knowledge sharing on important issues has become a critical element to maintain the partnership with supplier x</li> </ol> <p>(1=strongly disagree, 5=strongly agree)</p>	0.80	Kwon and Suh (2004)

<p><i>Resource-capabilities complementarity</i></p> <ol style="list-style-type: none"> <li>1. Resources and capabilities of your partner fit well with your company</li> <li>2. You and partner x are dependent on each other's expertise and knowledge</li> </ol> <p>(1=strongly disagree, 5=strongly agree)</p>	0.81	Adapted from Lin and Chen (2006)
<p><i>Effective governance</i></p> <ol style="list-style-type: none"> <li>1. Partner x usually has a collaborative approach to solve conflicts</li> <li>2. Most conflicts with partner x can be solved with informal mechanisms (ex. trust and collaboration)</li> <li>3. Most conflicts with partner x can be solved with formal mechanisms (ex. contractual mechanisms)</li> <li>4. High percentage of partner x stock is owned by your firm</li> </ol> <p>(1=strongly disagree, 5=strongly agree)</p>	0.71	Dyer (1997)
<p><i>Exchange performance</i></p> <p>Please rate supplier x's performance on fulfilling each of the following goals:</p> <ol style="list-style-type: none"> <li>1. Competitive price</li> <li>2. Timeliness of delivery</li> <li>3. High quality supply</li> </ol> <p>(1=very poor, 5=excellent)</p>	0.95	Zaheer et al. (1998)