

# Linking power, risk, and governance: a survey research in new product development relationships

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## Abstract

**Purpose** – Inter-organizational arrangements are increasingly playing an important role in new product development (NPD). This article aims to investigate the links among power, risk, and governance in these kinds of relationships.

**Design/methodology/approach** – The authors investigated the links based on the data collected from 112 respondents representing 112 different NPD relationships.

**Findings** – The results of structural equation modeling revealed that, in the situation where coercive power is imbalanced between partner firms, the weaker partner perceives relational risk while imbalances in non-coercive power do not influence relational risk perception significantly. The results also showed that relational risk perception is strongly associated with governance modes in such a way that negatively influences trust and the norm of information sharing, and positively affects vertical control, respectively. Further investigations revealed that the influence of power bases on governance modes was mediated through the relational risk perception.

**Originality/value** – This article contributes to a better appreciation of the factors that account for important determinants of opportunistic behavior of partner firms (i.e. power asymmetries) and governance modes that are available for companies in order to impede relational risks.

**Keywords** Power, Risk, Trust, Control, Governance, New product development, Channel relationships, Iran

**Paper type** Research paper

**An executive summary for managers and executive readers can be found at the end of this article.**

## 1. Introduction

While the business literature has already addressed a number of outcomes for companies actively engaged in strategic alliances, there is a growing body of evidence of high failure rates in these arrangements (Smith, 2008).

Thorelli (1986) argued that the key ingredients for success in inter-firm relationships include collaboration between members and the governance mechanism. Das and Teng (2001a) also believed that appropriate governance decreases the probability of failure in strategic alliances. These arguments are rooted in transaction cost economics (TCE) (Williamson, 1975), where there are important implications

for inter-firm relationships. According to TCE, power asymmetries function as the determinants of opportunistic behaviors, while governance mechanisms are used to limit the risk of opportunism. This implies that governance mechanisms entail the management of power asymmetries and risks of opportunism. Based on these arguments, through current research, we examine the relationship between power, risk, and governance.

Mintzberg (1983, p. 4) defined power as the capacity to affect organizational outcomes. In the present research, outcomes are governance mechanisms, which have rarely been studied empirically as the effects of power asymmetries. Regarding the concern of the current research, there are comparable studies, all of which are dominated by the idea that power influences outcomes through relational constructs (Table I). However, the mechanism through which relational constructs themselves are influenced by power asymmetry is less well understood. In the current research, drawing from TCE, it is supposed that there should be an implicit construct

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Table I Selected studies of power research in the inter-firm context

| Study                         | Context                      | Independent variables                    | Mediating variables                          | Dependent variables  |
|-------------------------------|------------------------------|--|--|----------------------|
| Maloni and Benton (2000)      | Buyer-supplier relationships | Mediated power versus non-mediated power | Relationship strength                        | Performance          |
| Leonidou <i>et al.</i> (2008) | Buyer-supplier relationships | Coercive power versus non-coercive power | Trust, conflict, satisfaction                | Commitment           |
| Oke <i>et al.</i> (2008)      | NPD relationships            | Position power versus personal power     | Tie strength                                 | Performance          |
| Ke <i>et al.</i> (2008)       | Buyer-supplier relationships | Mediated power versus non-mediated power | Trust, coercive pressure, normative pressure | Adoption intention   |
| Zhao <i>et al.</i> (2008)     | Buyer-supplier relationships | Mediated power versus non-mediated power | Relationship commitment                      | Customer integration |

(i.e. risk perception), which has been largely neglected in previous studies, and therefore this study tries to address that research gap.

In order to achieve the aforementioned objective, first, a theoretical model is derived that explains the relationships between power, risk, and governance. This model is based on:

- the TCE's notion of association between power asymmetries and the risks imposed on partners;
- the regulating role of risk perception on governance (e.g. Das and Teng, 2001b); and
- the underlying ingredients of governance (i.e. trust/control; Nooteboom, 2002).

This framework is an effort in line with the direction that has previously attracted attention by proposing various models such as the interaction model of the Industrial Marketing and Purchasing (IMP) Group (Hakansson, 1982) and the commitment-trust model (Morgan and Hunt, 1994).

Second, this theoretical model is tested using the survey data of 112 firms engaged in NPD projects. NPD is a major driver of the firm growth and sustainable competitive advantage, yet risks are intrinsic in NPD in all industries (Kwak and LaPlace, 2005). In fact, NPD processes may be riskier than any other process in organizations. A review of the extant literature on networks and strategic alliances reveals that little is known about NPD network governance and its determinants. These are very important issues; however, they have been largely neglected in the previous research (Oke *et al.*, 2008).

## 2. Theoretical background

### 2.1 Relational risk perception

Risk is a critical aspect of alliances (Das and Teng, 2001b) and is viewed primarily as the perception or subjective assessment of a negative consequence of a made decision (Das and Teng, 1996). It is the risk perceived by the firm, rather than the risk itself, that influences assessment of alternatives and decision making in managing inter-firm relationships (Sitkin and Weingart, 1995).

Das and Teng (2001a) enumerated two types of risk in strategic alliances:

- 1 relational risk; and
- 2 performance risk.

Relational risk addresses the possibility and the consequences of not committing to joint efforts (Ring and Van de Ven, 1994). The notion that relational risk is the consequence of

no commitment to the relationship implies that when there is a perception of relational risk, there should be uncertainties about commitment. In other words, in the presence of relational risk perception, the commitment construct is implicitly considered. According to Das and Teng (2001a), the design and structure of the relationship stems from relational risk perception.

Relational risk perception is a topic of substantial importance within innovation networks. For example, Dhanaraj and Parkhe (2006) argued that, in an atmosphere of commitment, appropriability concerns are low and learning flourishes because firms are more willing to share their proprietary knowledge. An innovation relationship characterized by a higher level of relational risk perception cannot respond to the changing environments in a flexible manner (Andaleeb, 1995).

### 2.2 Governance mechanism

According to TCE, firms consider different control mechanisms in order to oblige their partner's opportunism, and, consequently reduce transaction costs, improve the chances for cooperation, and promote performance. Since TCE has not paid enough attention to the social contexts in which exchange parties are embedded, scholars have used social elements for developing the types of governance mechanisms. These scholars believe that, to study the governance of inter-firm relations, a broader concept than the concept of control traditionally used in the literature is required (Van der Meer-Kooistra and Scapens, 2008). Nooteboom (2002) mentioned that although the term "governance" is taken from TCE, it can be extended considerably to include the issue of trust as well as risk and control. Nooteboom (2002) argued that these two modes are the underlying elements of governance mechanisms. Trust and control co-exist in relationships as each one assumes the existence of the other, refers to the other, and creates the other (Mollering, 2005).

#### 2.2.1 Trust

Trust is one of the most widely recognized social norms for governing exchange relationships. Inter-firm trust represents an organization's expectation that another firm will not act opportunistically when dealing with that organization (Gulati, 1995). Inter-firm trust has been related to desirable outcomes such as firm performance, conflict and opportunism reduction (Zaheer *et al.*, 1998) and competitive advantage (Barney and Hansen, 1994).

While commitment is the core element in defining relational risk perception, some scholars (e.g. Gundlach *et al.*, 1995; Leonidou *et al.*, 2008) have described commitment as a determinant of trust in exchange relationships. Scholars have found that the level of commitment is positively related to the level of trust (e.g. Morgan and Hunt, 1994; Kwon and Suh, 2004).

It is also well established that opportunistic behavior – an issue associated with risk perception within relationships – hinders trust formation (Currall and Inkpen, 2002). Doney and Cannon (1997) argued that trust actually alleviates opportunism. Ryu *et al.* (2008) argued that trust and opportunism need to be considered essential elements of inter-firm relationships. Based on these arguments, and in line with Barney and Hansen's (1994) findings, it is supposed that relational risk and lack of trust are related subjects. Thus, it is hypothesized that:

- H1.* In NPD relationships, a firm's perception of relational risk has a significantly negative effect upon its trust in its partner firm.

### 2.2.2 Control

Control is primarily defined as goal-oriented processes by which one partner tries to influence the behavior and output of another entity (Ouchi, 1979). Scholars have identified two major organizational control mechanisms:

- 1 unilateral control mechanisms (e.g. vertical control, monitoring); and
- 2 bilateral control mechanisms (e.g. relational norms).

The distinction between unilateral and bilateral control is based on the extent to which both sides participate in decision-making (Weitz and Jap, 1995). Unilateral control is based on the controlling party's effort to influence its partner's actions (Stump and Heide, 1996). It is based on the use of external measurement, such as measuring output or monitoring the behavior of a partner (Heide, 1994). Bilateral control, on the other hand, is reliance on a shared set of principles that coordinate the activities of both exchange parties (Heide, 1994; Weitz and Jap, 1995).

Since risks are intrinsic in NPD in all industries (Kwak and LaPlace, 2005), notion of transaction cost theory is followed, which implies that vertical control – as an important form of unilateral control – can be used to reduce the opportunistic behavior of the partner under uncertainties (Celly and Frazier, 1996). Vertical control refers to the extent to which a firm has control over another firm's key decisions (Heide, 1994).

On the other hand, Heide and John (1992) enumerated three relational norms as bilateral control mechanisms, including:

- 1 the norm of flexibility;
- 2 the norm of solidarity; and
- 3 the norm of information sharing.

Among the various relational norms, the norm of information sharing appears to be of particular importance in NPD relationships as these arrangements are heavily based on knowledge sharing (Noordewier *et al.*, 1990). The norm of information sharing refers to the expectation that both parties do not withhold information from each other (Heide and John, 1992).

To the authors' best knowledge, there have been no previous studies in the extant literature addressing how relational risk perception influences modes of governance, but there are related studies that investigate the relationship between commitment – the core element of relational risk perception definition – and governance modes. For example, Jap and Ganesan (2000) found that unilateral control in the form of an explicit contract is negatively associated with supplier commitment. In another study of modes of network governance, Provan and Kenis (2008) argued that shared governed networks depend exclusively on the commitment of all partners and more centralized networks are characterized by more vertical control.

There are also relevant studies in which scholars have found links between opportunism and vertical control. For example, Ryu *et al.* (2008) found that because of a supplier's potential opportunism under uncertainties, a manufacturer is inclined to control its supplier's key decisions vertically. Uncertainties encourage firms to monitor and control closely their exchange counterparts' potential opportunism (Noordewier *et al.*, 1990). Based on these findings and arguments, the following is hypothesized:

- H2.* In NPD relationships, a firm's perception of relational risk has a significantly positive effect upon its use of vertical control.

The norm of information sharing, i.e. the expectation that members of a relationship are willing to exchange key technical, financial, operational and strategic information (Heide and John, 1992), improves the coordination of innovation activities (Maltz, 2000), reduces conflicts between firms (Xie *et al.*, 2003) and facilitates NPD (Magnet, 1994). While using a bilateral control mechanism relies on high levels of information exchange between exchange parties (Noordewier *et al.*, 1990), Gundlach *et al.* (1995) gave the example of the disclosure of confidential information about market strategy, competition and proprietary knowledge about product design, technology, research and development as a demonstration of commitment. Like Gundlach *et al.*, Doney and Cannon (1997) argued that sharing confidential information between buyers and sellers provides a signal that the partner's motives and intentions are benevolent. The negative relationship between opportunism/not committing to the relationship and information sharing has also been reported by other scholars (e.g. Damanpour, 1991; Anderson and Weitz, 1992). Taken together, based on these arguments and findings, it is hypothesized that:

- H3.* In NPD relationships, a firm's perception of relational risk has a significantly negative effect upon its perception of norm of information sharing.

### 2.3 Power

In a dyadic relationship, power is derived from asymmetric dependence, which refers to the dominant firm's capability to influence the target firm to act as the dominant firm desires (Dabholkar and Neeley, 1998). Raven *et al.* (1998) suggested that there are six bases of power (see Table II):

- 1 reward power;
- 2 coercive power;
- 3 expert power;
- 4 legitimate power;

Table II Different power bases

| Power base               | Description  |
|--------------------------|--|
| <b>Reward power</b>      | Based on the perception that the exchange partner has the ability and resources to reward if directives are complied with                                |
| <b>Coercive power</b>    | Based on fear and perception that the exchange partner has the ability to punish or bring about undesirable outcomes if directives are not complied with |
| <b>Legitimate power</b>  | The perception that an exchange partner has the right to exercise influence because of its role or position  |
| <b>Referent power</b>    | Based on the exchange partner's attractiveness, characteristics, reputation, or "charisma"   |
| <b>Expert power</b>      | An exchange partner with expert power is perceived as competent in an area or has special knowledge in a limited or special area                         |
| <b>Information power</b> | Refers to power that stems from the possession of information that others would not otherwise have had access to   |

Source: Oke *et al.* (2008)

- 5 information power; and  
6 referent power.

Based on this classification, several dichotomies (e.g. mediated versus non-mediated or coercive versus non-coercive) have appeared. Depending on how aggressive power bases are in their nature, they can be classified into coercive (i.e. aggressive) and non-coercive (i.e. non-aggressive) (Lusch and Brown, 1982). In the present research, the focus is on the coercive and non-coercive (i.e. reward, legitimate, expertise, referent, information) typologies (Leonidou *et al.*, 2008), since it is thought that the sample context is characterized by a high power distance culture. In high power distance cultures, coercive power is more likely to be used for influencing others (Zhao *et al.*, 2008).

Coercive power has negative ramifications (Anderson and Weitz, 1992; Provan and Gassenheimer, 1994; Muthusamy and White, 2005). It holds a negative association with cooperation (e.g. Skinner *et al.*, 1992; Benton and Maloni, 2005). Coercive power asymmetries within a buyer-supplier relationship can lead to unproductive partnerships (McDonald, 1999). Boyle *et al.* (1992) found that one firm's use of power in the channel directly affected its partner's perceptions of relationalism, in which commitment plays a central role (Morgan and Hunt, 1994). Appropriate power usage would enhance commitment within the relationship, while improper use of power diminished commitment (Brown *et al.*, 1995). Buchanan (1992) suggested that the symmetry of power within the channel sets boundaries on the extent to which a channel member commits to its relationship with another.

In addition to the aforementioned arguments and findings that have shown negative links between coercive power and relational constructs such as cooperation and commitment, there are also debates in literature that assert the associations between power and risk. Leonidou *et al.* (2008) reviewed many studies that have shown the empirically that the

exercising of coercive power is both risky and counter-productive. Earlier, Williamson (1975) addressed the issue that unbalanced relationships are characterized by the risk of opportunistic behavior. Steensma and Lyles (2000) asserted Williamson's debate as they argued that, in general, all unbalanced relationships are characterized by instability and risk. These arguments imply that, in the long term, the position of the weaker party may be eroded and the partnership may be destroyed. Based on these arguments, it is supposed that coercive power asymmetries are associated with a higher level of relational risk perceived by the weaker side. In sum, power is an important source of relational risk (Deleue, 2004; Ojala and Hallikas, 2006). Therefore, the following hypothesis is put forth:

- *H4*. In NPD relationships, coercive power asymmetry has a significantly positive effect upon relational risk perceived by the weaker partner.

On the other hand, non-coercive power sources seem to be more relational and positive, as Hunt *et al.* (1987) found a positive relationship between non-coercive power and cooperation. Leonidou *et al.* (2008) argued that the parties involved in the relationship characterized by non-coercive power are motivated to:

- reveal any possible areas of disagreement that can be subsequently resolved;
- better understand each other's perspective;
- critically review past actions and identify mistakes; and
- collectively analyze and offer mutually agreed solutions to problems.

These scholars found that the exercise of non-coercive power in exporter-importer working relationships is negatively related to conflict. Brown *et al.* (1995) believed that the use of non-coercive power enhances positive attitudes toward the channel relationship, which in turn heightens the degree of relationalism between channel partners. These scholars also argued that the more a firm uses non-coercive power to influence a retailer, the more it focuses on common norms and values as well as the relationship itself. Liu *et al.* (2008) indicated that dyadic solidarity between a buyer and a supplier could directly reduce the buyer's perceived relational risk. They argued that dyadic solidarity could mitigate the relational risk perceived by a buyer because an intimate dyadic relationship and a common attitude can change a supplier's behavior from self-interest to giving attention to mutual tasks and benefits.

Overall, the discussions in the literature lead us to believe that partners in relationships characterized by relational norms and non-coercive power perceive less relational risk. Therefore, it is suggested that:

- H5*. In NPD relationships, non-coercive power asymmetry has a significantly negative effect on relational risk perceived by the weaker partner.

## 2.4 Relational risk perception as a mediator

The mediation role of relational risk perception in this paper's theoretical model is based on the contributions offered by Das and Teng (2001a), Emerson (1962) and Feldman (1998). Das and Teng (2001a) proposed a model of the decision-making process in a strategic alliance based on two principles:

- 1 decision makers' perceptions; and
- 2 heuristics or decision rules that they use.



In line with these scholars, this paper's decision model is proposed based on the relational risk perception and trust/control options.

Furthermore, Emerson (1962) stated that as one party in a relationship is seen to gain power, the other would seek to rebalance power. Feldman (1998) also described the theory of disrupted or punctuated equilibrium, in which an action resulting in an imbalance in an exchange relationship leads to an action to rebalance in order to restore the equilibrium. In the model presented here, power asymmetries are rebalanced through governance modes. Hence, in the current research based on previous hypotheses (*H1-H3*, and *H4-H5*), it is contended that power asymmetries influence governance modes through relational risk perception:

*H6.* In NPD relationships, relational risk perception will mediate the association that power asymmetries have with modes of governance.

### 3. Research methodology

#### 3.1 Sampling and data collection

In order to examine the hypothesized relationships, a survey research design was utilized. A questionnaire was designed, pre-tested, administered and analyzed to establish the required links. Firms that had been involved in different new product development projects were identified from the database of an Iranian agency. These firms were SMEs engaged in NPD relationships. The number of their employees varied from 20 to 150. These SMEs were established to develop high technologies like aircraft and aerospace technologies in Iran's private sector. Most of these SMEs' partners were also Iranian firms. To maintain confidentiality, it was agreed with participants that details of the relationships would not be divulged. Since most of inter-firm studies, especially in high technologies, have been conducted in developed countries from the West or the Far East, the selected context provided an opportunity to examine less well studied samples.

The managing director of each sampled firm was selected as the target informant. The respondents were asked to think about their major partner who had been involved in an NPD project when responding to the survey. An informant competency test was conducted in the pretest using recommendations offered by Kumar *et al.* (1993). The results indicated that the respondents' companies had an average eight-year relationship with their major partner and that the respondents had held their current positions for five years. Furthermore, the respondents appeared to be highly knowledgeable about their partners (mean = 5.9 on a scale of 1–7). As such, it was concluded that the target informants were qualified to answer the survey.

In the main study, target respondents from 200 out of 422 firms registered in a database, and were selected randomly to receive a questionnaire, a cover letter and a request to complete the enclosed questionnaire. After two follow-ups, 133 questionnaires were received, of which 112 were used for hypotheses testing, i.e. an effective response rate of 56 percent. The sample size of 112 firms was felt to be sufficient for providing reasonable estimates in the structural equation analysis. A sample size approaching 100 is often thought to be sufficient for structural equation analysis unless there are many indicators (Loehlin, 1992).

The 112 usable responses were tested for non-response bias by comparing early respondents with late respondents (Armstrong and Overton, 1977). The mean value for each focal measurement scale, the characteristics of the participating companies and the key informants (i.e. years of relationship with the major partner, years of experience with the firm, familiarity with the major partner) were compared across the two groups. The comparison results indicated no significant differences between the two groups ( $0.174 < p < 0.846$ ).

#### 3.2. Scale development

Development of the scale was carried out in two stages. First, the existing measures of the focal variables were collected from the literature. Second, interviews were conducted with experts and managers in order to check the relevance of the collected measures. Interviewees were selected from marketing, operations, strategy management scholars and managers in the aircraft and aerospace industries. The interviewees helped the researchers to select the context, scales, and target informants. All items were written as seven-point Likert-type scales anchored by 1 ("strongly disagree") and 7 ("strongly agree") as endpoints. An English version of the questionnaire was first developed. Then, the translation back-translation method was used to develop a Persian version. The questionnaire was pre-tested using a sample of 30 companies, resulting in final modifications and clarifications.

The instruments used in this study were based on the established measures utilized in previous studies. The scales offered by Leonidou *et al.* (2008), Kumar *et al.* (1995), Liu *et al.* (2008), Heide and John (1992) and Ryu *et al.* (2008) were used to assess coercive and non-coercive power, trust, relational risk perception, norm of information sharing and vertical control.

Based on confirmatory factor analysis (CFA), a scale was developed for each construct with a reduced set of items by removing the items with low factor loadings. Coefficient  $\alpha$  for each construct was measured using an internal reliability test. All of the Cronbach's  $\alpha$  values in Table III exceed the recommended minimum value of 0.60 (Rosnow and Rosenthal, 1998). In addition, each of the factor loadings was significant on its respective latent factor ( $p < 0.01$ ) suggesting that each of the indicators captured the constructs they were designed to measure (two of the items offered by Kumar *et al.*, 1995, were removed as their loadings were less than 0.4).

Discriminant validity of latent variables was checked through  $\chi^2$  difference tests. Constructs were tested in pairs in order to see whether the restricted model (in which the correlation was fixed as 1) was significantly worse than the freely estimated model (in which the correlation was estimated freely).  $\chi^2$  difference tests resulted in 6.02, 43.64, 73.6, 6.06, 8.54 and 22.38 for the pairs of trust/norm of information sharing, trust/non-coercive power, norm of information sharing/non-coercive power, relational risk perception/vertical control, relational risk perception/coercive power, an coercive power/vertical control ( $p < 0.01$ ). Inter-correlations of less than 0.6 indicated that multi-collinearity was not a potential problem for this research (Grewal *et al.*, 2004). After the scale development process, a measurement model with the good fit was identified ( $\chi^2 = 198.58$ ,  $df = 194$ ,  $RMSEA = 0.015$ ,  $TLI = 0.98$ ,

Table III Factor loadings and reliabilities

| Variables                         | Factor loadings | Items | Reliability |
|-----------------------------------|-----------------|-------|-------------|
| VC (vertical control)             | VC1             | 0.70  | 0.70        |
|                                   | VC2             | 0.64  |             |
|                                   | VC3             | 0.58  |             |
|                                   | VC4             | 0.70  |             |
|                                   | VC5             | 0.72  |             |
| TR (trust)                        | TR1             | 0.74  | 0.64        |
|                                   | TR2             | 0.74  |             |
|                                   | TR3             | 0.81  |             |
| RR (relational risk perception)   | RR1             | 0.73  | 0.70        |
|                                   | RR2             | 0.74  |             |
|                                   | RR3             | 0.75  |             |
|                                   | RR4             | 0.70  |             |
| CP (coercive power)               | CP1             | 0.71  | 0.63        |
|                                   | CP2             | 0.71  |             |
|                                   | CP3             | 0.74  |             |
| NCP (non-coercive power)          | NCP1            | 0.75  | 0.72        |
|                                   | NCP2            | 0.55  |             |
|                                   | NCP3            | 0.65  |             |
| NIS (norm of information sharing) | NIS1            | 0.74  | 0.70        |
|                                   | NIS2            | 0.71  |             |
|                                   | NIS3            | 0.74  |             |
|                                   | NIS4            | 0.72  |             |

CFI = 0.97, IFI = 0.97, NFI = 0.86, RFI = 0.83, RMR = 0.15, GFI = 0.86).

#### 4. Results

Structural equation modeling (SEM) was performed to test the hypotheses. Holmbeck (1997) suggested that mediation models are best estimated using SEM.

Table IV presents the means, standard deviations, and zero-order correlations among the studied variables. Zero-order correlations provide an initial examination of the hypotheses linking the variables.

Figure 1 displays the causal model when all the predicted paths are included. The fit indices of this structural model shows a good fit to the data ( $\chi^2 = 218.15$ ,  $df = 203$ ,  $NFI = 0.85$ ,  $TLI = 0.97$ ,  $CFI = 0.97$ ,  $GFI = 0.85$ ,  $RMSEA = 0.026$ ).

As shown in Figure 1, the results of the structural equation modeling reveal a negative link from relational risk perception to trust ( $\beta = -0.88$ ,  $p < 0.01$ ), a positive link from relational risk perception to vertical control ( $\beta = 0.80$ ,  $p < 0.01$ ), and a negative link from relational risk perception to the norm of

information sharing ( $\beta = -0.59$ ,  $p < 0.01$ ), providing support for *H1-H3*. Results also reveal a positive link from coercive power to relational risk perception ( $\beta = 0.35$ ,  $p < 0.01$ ), and a non-significant negative link from non-coercive power to relational risk perception ( $\beta = -0.09$ ,  $p < 0.01$ ) providing support only for *H4*.

*H6* predicted that relational risk perception would mediate the effects of power asymmetries on governance modes. This hypothesis was tested through comparison of the rival models (Figure 2). An emerging consensus in structural equations modeling is that research should compare rival models, not just test a proposed model (Bollen and Long, 1992). A non-parsimonious rival view that is equally extreme would be one positing only direct paths from each of the antecedents to the outcomes, thereby making relational risk perception similar to the antecedent (i.e. power asymmetries). Although the results ( $\Delta df = 6$ ,  $\Delta\chi^2 = 4.71$ ,  $p = 0.58$ ; see Table V) show that there are no considerable differences between overall the goodness of fit of the two models, all paths from coercive power to governance modes are not significant, and paths from relational risk perception to both vertical control and the norm of information sharing are contrary to primary expectations.

Although the results of the rival model indicated good fit indices, they were not consistent with previous studies and with the authors' expectations. Hence, a series of nested model comparisons were tested. A nested model test, commonly adopted in causal model analysis, is used where the indirect effects model that proposes mediating effects is compared to the direct effects model (Oke *et al.*, 2008). Table VI shows the results of nested model comparisons.

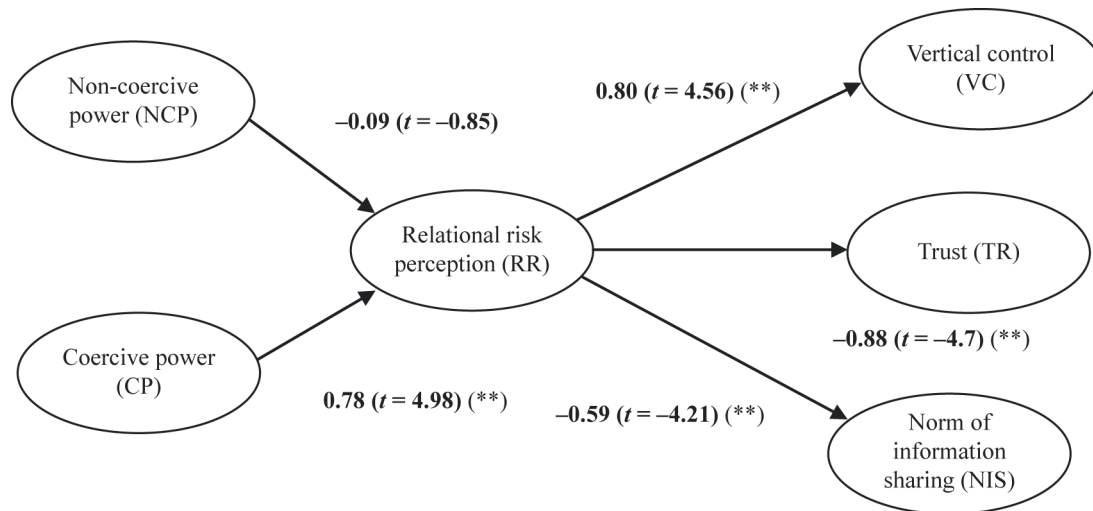
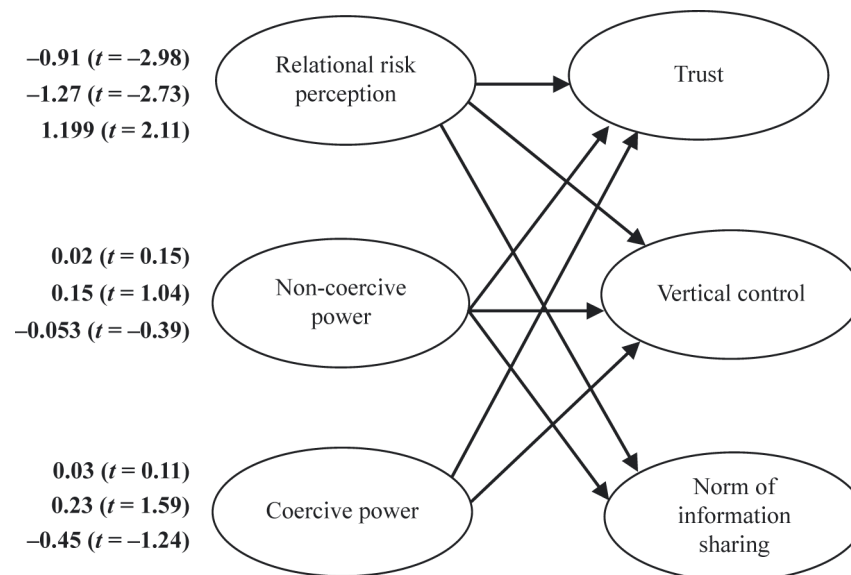
In models 2-4, direct links were added from non-coercive power to governance modes. In models 5-7, direct links were added from non-coercive power to governance modes. Model 8 was a fully saturated model in which direct paths were added from both non-coercive power and coercive power to governance modes. The mediation hypotheses would be supported if the fit of model 1 would not be improved by adding direct paths.

As shown in Table VI, the differences between  $\chi^2$  values were not significant for model 1 compared with models 2-8. Under the rules of model parsimony (see Oke *et al.*, 2008), these results suggested that the basic model best fitted the data. Hence, it is concluded that relational risk perception mediated the relationships that power asymmetries have with governance modes. Furthermore, none of directly added paths were significant. *H6* is therefore supported by the data.

Table IV Descriptive statistics and correlations

| Variables | Means | SD    | CP        | NCP     | RR        | TR        | VC          | NIS |
|-----------|-------|-------|-----------|---------|-----------|-----------|-------------|-----|
| CP        | 4.029 | 1.227 | –         |         |           |           |             |     |
| NCP       | 3.379 | 1.031 | –0.158    | –       |           |           |             |     |
| RR        | 3.792 | 1.173 | 0.485 **  | –0.140  | –         |           |             |     |
| TR        | 3.946 | 1.202 | –0.470 ** | 0.147   | –0.555 ** | –         |             |     |
| VC        | 3.894 | 1.096 | 0.360 **  | –0.150  | 0.573 **  | –0.402 ** | –           |     |
| NIS       | 3.745 | 1.044 | –0.304 ** | 0.222 * | –0.374 ** | 0.517 **  | –0.468 (**) | –   |

Notes: \* $p < 0.05$ ; \*\* $p < 0.01$

**Figure 1** Results of structural equation modeling**Figure 2** Rival model**Table V** Comparison of structural equation models (basic versus rival model)

| Model       | $\chi^2$ | df  | $\Delta\chi^2$ | NFI  | TLI  | GFI  | RMSEA |
|-------------|----------|-----|----------------|------|------|------|-------|
| Basic model | 218.15   | 203 |                | 0.85 | 0.97 | 0.85 | 0.026 |
| Rival model | 213.44   | 197 | 4.71           | 0.85 | 0.96 | 0.81 | 0.027 |

## 5. Discussion and conclusion

### 5.1. Theoretical contribution

In the current research a model is proposed in which power asymmetries drive risk-based governance mechanisms in collaborative NPD activities. We address some important relational factors that foster the evolution and dynamics of inter-firm relations.

The negative effect of relational risk perception on trust and norm of information was consistent with the findings reported

by scholars who believe that trust and opportunism are polar opposites (e.g. Barney and Hansen, 1994) and those who have found positive associations between commitment and norm of information sharing (e.g. Damanpour, 1991).

The positive effect of relational risk perception on vertical control was also consistent with the arguments offered by previous researchers who believe that when the weaker partner perceives exploitation, it may guard against it (Provan and Gassenheimer, 1994). Vertical control is a preventive measure used for controlling potential opportunistic behaviors.

Table VI Comparison of structural equation models for the nested models

| Model | Added path (from-to) | $\chi^2$ | Df  | $\Delta\chi^2$ | NFI  | TLI  | GFI  | RMSEA | Added paths      |            |
|-------|----------------------|----------|-----|----------------|------|------|------|-------|------------------|------------|
|       |                      |          |     |                |      |      |      |       | Path coefficient | t-value    |
| 1     | Basic model          | 218.15   | 203 |                | 0.85 | 0.97 | 0.85 | 0.027 |                  |            |
| 2     | NCP-TR               | 218.36   | 202 | 0.21           | 0.85 | 0.97 | 0.85 | 0.027 | −0.06            | −0.57      |
| 3     | NCP-VC               | 217.99   | 202 | 0.16           | 0.85 | 0.97 | 0.85 | 0.027 | −0.02            | 1.11       |
| 4     | NCP-NIS              | 216.43   | 202 | 1.72           | 0.85 | 0.97 | 0.85 | 0.025 | 0.13             | −0.57      |
| 5     | CP-TR                | 215.15   | 202 | 3              | 0.85 | 0.97 | 0.85 | 0.024 | −0.27            | −1.22      |
| 6     | CP-VC                | 217.25   | 202 | 0.9            | 0.85 | 0.97 | 0.85 | 0.026 | −0.49            | −0.13      |
| 7     | CP-NIS               | 216.86   | 202 | 1.29           | 0.85 | 0.97 | 0.85 | 0.026 | 0.37             | 1.25       |
| 8     | Fully saturated      | 213.44   | 197 | 4.71           | 0.85 | 0.96 | 0.85 | 0.027 | −0.02_0.58       | −0.15_1.59 |

The positive effect of coercive power asymmetry on relational risk perception was in line with the findings of previous scholars who argue that the restricted use of power may be a fundamental shift in the policies of firms entering long-term strategic alliance relationships (Muthusamy and White, 2005). Inter-firm asymmetry will defeat commitment (Anderson and Weitz, 1992), which is the core element of relational risk perception.

The negative effect of non-coercive power on relational risk perception was not supported. A possible explanation may lie in the fact that, in line with Leonidou *et al.* (2008), the non-coercive power construct was operationalized through integrating different power bases in a single scale. Although the extant literature has addressed the issue that non-coercive power is relational and positive, there are also debates that challenge this belief. For example, Mishra *et al.* (1998) argued that asymmetric information – as a form of non-coercive power – between the focal firm and partner firm makes the former think of being opportunistically exploited by the latter. These mixed results necessitate further investigation. While a medium-sized sample was used in this study, larger samples provide opportunities to test theoretical models in which six different power bases are considered separately.

Overall, this study considered social factors that enhanced the understanding of inter-firm relationships. Particularly, this study enhanced the understanding of NPD relationships by examining the key determinants of governance. Additionally, through the current research, a model of a risk-based governance mechanism is proposed in NPD relationships.

## 5.2 Limitations and future research

This paper has both theoretical and methodological limitations. While the current study focuses on a particular institutional environment, scholars (e.g. Dyer and Chu, 2003) have noticed that different contexts may influence the development of inter-firm relationships. Governance is embedded in a wider context of organizational structure and extra-organizational factors (Flamholtz *et al.*, 1985) that may influence inter-firm dynamics. For example, potential contextual variables, such as industry type and firm size, may influence the relationships found in this study, so these factors could be incorporated in future studies.

The data for this analysis were obtained from a single informant. Although choosing the appropriate key informant could alleviate some of the potential problems (Kumar *et al.*, 1993), there are potentials that dyadic data or multiple respondents may offer to this study.

Further research might consider other mechanisms for governing relationships, such as the exchange of hostages, mutual transaction-specific investment, reputation (Bond *et al.*, 2004) and inter-organizational embeddedness (Rindfleisch and Moorman, 2001).

Finally, since this medium-sized sample was characterized by coercive power, the coercive and non-coercive typology was used (Leonidou *et al.*, 2008), so conducting the current research through categorization of power bases as mediated versus non-mediated (Benton and Maloni, 2005) is another path for future research. Larger samples would also provide opportunities for considering all six different power bases.

## 5.3 Implications

This paper's discussions can help managers of NPD networks to evaluate systematically the circumstances that may increase or decrease the probability of relational risk perceived by partner firms. Thus, managers would be in a better position to assess the risk of an alliance engagement with a particular partner. In particular, the roles of power asymmetries as circumstances that may increase or decrease the probability of relational risk perceived by partner firms were investigated. It was found that coercive power asymmetries were strongly associated with relational risk perception. In other words, it was found that when coercive power was imbalanced between the partners, firms would face the risk of opportunistic behavior. No significant relationship was found between non-coercive power and relational risk perception.

On the other hand, alliance managers have a set of tools to ensure the functioning of the alliance under the perception of relational risk. In the proposed model, the key tools to deter and control relational risk perception were comprised of vertical control, norm of information sharing, and trust.

According to TCE, unilateral control mechanisms such as vertical control or monitoring are useful in detecting signs of the partner's lack of commitment by closely observing the activities of the partner within the alliance context. However, these control mechanisms have their own shortcomings and frequent use of them may destroy the relationship (Dekker, 2004).

As a managerial tool, bilateral control mechanisms such as relational norms involve bringing in representatives of all member firms to make decisions regarding alliance goals, maintenance, operations, performance, and the like. They also bridge the gap in values, understanding and communication between the partners. For these reasons, norm of information sharing would be decreased by the perception that a partner is not be fully committed to join



endeavors. Since there is a consensus regarding the importance of formalizing continuous, two-way information flow, partners should also realize how relational risk perception influences the norm of information sharing.

Finally, there was an emphasis on the importance of plural governance mechanisms (Bond *et al.*, 2004). For example, partner firms should determine the level of inter-firm trust as well as assessing the level of control needed in order to avoid unnecessary vertical control, which is as costly as, if not costlier than, the partner's opportunism.

In summary, this article has contributed to a better appreciation of the factors that account for the opportunistic behavior of partner firms (i.e. power asymmetries) and governance options that are available for companies in order to impede the relational risk.

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## Appendix. Questionnaire

### Trust (TR)

- TR1. Though circumstances change, we believe that this partner will be ready and willing to offer us assistance and support.
- TR2. When making important decisions, this partner is concerned about our welfare.
- TR3. In the future, we can count on this partner to consider how its decisions and actions will affects us.

### Relational risk perception (RR)

- RR1. Our resources, equipment, and personnel invested in the relationship may be devalued because this partner breaks faith.
- RR2. The possible changes of this partner will lead to a high risk in the business relationship with this partner.
- RR3. This partner is likely not to invest complying with the contract completely in the business relationship.
- RR4. This partner may imitate our management experience and operation process in the business relationship.

### Vertical control (VC)

- VC1. production processes are largely determined by our requirements
- VC2. engineering changes are largely determined by our requirements
- VC3. Level of inventory is largely decided by us.
- VC4. We largely influence part-prices.
- VC5. Quality control procedures are largely decided by us.

### Norm of information sharing (NIS)

- NIS1. Our company is supposed to exchange information with this partner regularly.
- NIS2. Both our company and our partner provide proprietary information if it can help the other company.

NIS3. Both our company and our partner keep each other informed about changes that may affect the other company.

NIS4. Both our company and our partner share information that might help the other company.

### Coercive power (CP)

- CP1. Our partner firm threatens us to take legal action if we do not comply with its requests.
- CP2. Our partner firm withholds important support from our firm if we do not comply with its demands.
- CP3. Our partner firm threatens us to deal with another supplier in order to make us submit to their demands.

### Non-coercive power (NCP)

- NCP1. Our partner firm offers specific incentives to us when we are reluctant to cooperate.
- NCP2. Our partner firm has the upper hand in the relationship, due to power granted to it by the contract.
- NCP3. Our partner firm withholds critical information concerning the relationship, to better control our company.

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## Executive summary and implications for managers and executives

*This summary has been provided to allow managers and executives a rapid appreciation of the content of the article. Those with a particular interest in the topic covered may then read the article in toto to take advantage of the more comprehensive description of the research undertaken and its results to get the full benefit of the material present.*

Entering into a business relationship with another organization can be a risky enterprise – witness the high failure rates among such alliances. In all such relationships you are likely to find that one partner has more power to wield than the other. Whether or not that partner uses their power inappropriately – i.e. to the detriment of the other – is a major factor in the likelihood of the relationship flourishing or failing. Not only the reality of how that power is used, but by the perception of how it might be used in an opportunistic way.

Of course, power can, depending on the more powerful partner's intentions, be used for either good or – well, perhaps not evil, but let's say in a more negative way. Depending on how aggressive power bases are in their nature, they can be classified into coercive (aggressive) and non-coercive (non-aggressive). Coercive power might be tempting but beware its negative associations with cooperation. Many studies have shown the exercise of coercive power is both risky and counterproductive. In general, all unbalanced relationships are characterized by instability and risk. In the long term, the position of the weaker party may be eroded and the partnership destroyed.

Based on these arguments, it is supposed that coercive power asymmetries are associated with the higher level of relational risk perceived by the weaker side. That is to say power is an important source of relational risk. As Afshar Bazyar *et al.* conclude in "Linking power, risk, and governance: a survey research in new product development relationships", in NPD relationships, coercive power asymmetry has a significantly positive effect upon relational risk perceived by the weaker partner.

The exercise of power, appropriately or inappropriately, holds risks for both the more-powerful and less-powerful partner. Risk is part and parcel of a business alliance and it's been said that it is the risk perceived by the firm, rather than the risk itself, that influences assessment of alternatives and decision making in managing inter-firm relationships.

How power is used risks managed are addressed by the governance mechanisms put into place when an alliance is formed. According to transaction cost economics (TCE), power asymmetries function as the determinants of opportunistic behaviors while governance mechanisms are used to impede the risk of opportunism. This implies that governance mechanisms entail the management of power asymmetries and risks of opportunism.

Against a background of inter-organizational arrangements playing an increasingly important role in new product development (NPD), Afshar Bazyar *et al.* examine the relationship between power, risk, and organizational governance in these kinds of relationships. Their study is intended to help managers of new product development networks to systematically evaluate the circumstances that may increase or decrease the probability of relational risk perceived by partner firms. This means they would be in a better position to assess the risk of an alliance engagement with a particular partner. In particular, the roles of power asymmetries as the circumstances that may increase or decrease the probability of relational risk perceived by partner firms were investigated.

It was found that coercive power asymmetries were strongly associated with relational risk perception. When coercive power was imbalanced between the partners, firms would face the risk of opportunistic behavior. No significant relationship was found between non-coercive power and relational risk perception. On the other hand, alliance managers have a set of tools to ensure the functioning of the alliance under the perception of relational risk. In a proposed model, the key tools to deter and control the relational risk perception comprised vertical control, norm of information sharing and trust.

According to transaction cost economics, unilateral control mechanisms, such as vertical control or monitoring, are useful in detecting signs of the partner's lack of commitment by closely observing the activities of the partner within the alliance context. However, these control mechanisms have their own shortcomings and frequent use of them may destroy the relationship.

As a managerial tool, bilateral control mechanisms, such as relational norms, involve bringing in representatives of all member firms to make decisions regarding alliance goals, maintenance, operations, performance, and the like. They also bridge the gap in values, understanding and communication between the partners. For these reasons, the norm of information sharing would be decreased by the perception that partner would not be fully committed to join endeavors. Since there is a consensus over the importance of formalizing continuous, two-way information flow, partners should also realize how relational risk perception influences the norm of information sharing.

There was an emphasis on the importance of plural governance mechanisms. For example, partner firms should determine the level of inter-firm trust as well as assessing the level of needed control in order to avoid unnecessary vertical control, which is as costly as, if not costlier than, partner's opportunism.

*(A précis of the article "Linking power, risk, and governance: a survey research in new product development relationships". Supplied by Marketing Consultants for Emerald)*