Complementarity between Formal and Relational Governance Mechanisms in Interorganizational Networks

Combining Resource-based and Relational Governance Perspectives

Tugba Gürçaylılar-Yenidogan
Asst. Prof. Dr.
Faculty of Economics and Administrative Sciences
Department of Business Administration
Izmir University
Gursel Aksel Bulvari No: 14
35350 Uckuyular, Izmir, Turkey
Telephone: +90 232 2464949
Fax: +90 232 2240909
Email: t.yenidogan@hotmail.com

Josef Windsperger
Professor Dr.
Faculty of Business, Economics and Statistics
Department of Management
University of Vienna
Oskar-Morgenstern-Platz 1
A-1090 Vienna, Austria
Telephone: +43 1 4277 38180
Fax: +43 1 4277 38174
Email: josef.windsperger@univie.ac.at

Presented at the
Economics and Management of Networks Conference
(EMNet 2013)
(http://emnet.univie.ac.at/)

Robinson Hotel and University Ibn Zohr
Agadir, Morocco

November 21-23, 2013
ABSTRACT

Previous research has mainly focused on the transaction cost view of governance which argues that formal and relational governance mechanisms in interorganizational networks are substitutes. This study extends the work on formal and relational governance in network relationships by developing an integrative framework based on resource-based and relational governance perspectives in order to explain the complementary relationship between formal and relational governance mechanisms. The resource-based and relational governance views argue that formal and relational governance mechanisms function as complements for knowledge creation, knowledge integration and communication in explaining relational outcome. The results from 104 suppliers in the Turkish automotive industry support the complement perspective.

Keywords: formal and relational governance mechanisms; resource-based and relational governance views; knowledge creation; knowledge integration.
1 Introduction

Interorganizational networks, such as strategic alliances, joint ventures and franchise relationships, are governed by formal and relational governance mechanisms. Formal governance mechanisms refer to contractual and authoritative governance (Caniels and Geldermann, 2010; Wang, Bradford, Xu and Weitz, 2008; Zhang and Zhou, 2013) and relational governance mechanisms refer to the role of trust, norms and solidarity in contractual relationships (Cai, Yang and Jun, 2011; Cai and Yang, 2008; Caniels, Gelderman and Vermeulen, 2012; Heide and John 1992; Kaufmann and Stern, 1988; Macneil 1983; Thorgren and Wincent, 2011). This study examines the relationship between formal and relational governance mechanisms in supplier networks by applying resource-based and relational governance perspectives. It complements the transaction cost explanation by showing that relational governance in conjunction with formal governance facilitates knowledge creation, knowledge integration and communication between network partners thereby increasing relational rents (Dyer and Singh, 1998; Dyer, Singh and Kale, 2008; Kale, Singh and Perlmutter, 2000; Madhok and Tallman, 1998; Zajac and Olsen, 1993).

In recent years, research on interorganizational networks has been focusing on the relationship between formal contract and trust. According to this literature, contracts as formal governance mechanisms may vary positively or negatively with trust as a relational governance mechanism (e.g., Arranz and Fdez. de Arroyabe, 2012; Cavusgil, Deligonul and Zhang, 2004; Faems, Janssens, Madhok and Van Looy, 2008; Klein Woolthuis, Hillebrand and Nooteboom, 2005; Poppo and Zenger, 2002). Some authors (Cavusgil et al., 2004; Dyer, 1997; Ghoshal and Moran, 1996; Gulati, 1995; Nooteboom, Berger and Noorderhaven, 1997) suggest that trust may be a substitute for formal contracts as a safeguard mechanism against opportunism risk under high exchange hazards. In this case, trust decreases transaction costs due to lower relational risk and hence the need for formal contracting, and more formal
contracts decrease trust due to the negative effect on partners’ motivation to behave cooperatively. On the other hand, trust and formal contracts may be complements (e.g., Goo, Kishore, Rao and Nam, 2009; Li, Poppo and Zhou, 2010; Liu, Luo and Liu, 2009; Luo, 2002; Poppo and Zenger, 2002).

This study adds to the complement perspective of formal and relational governance in supplier networks by developing an integrative model based on resource-based and relational governance explanations. Resource-based theory (RBT) focuses on the explanation of governance mechanisms as knowledge creation and integration devices that generate relational rents by increasing the governance capabilities of interorganizational networks (Madhok and Tallman, 1998; Mayer and Salomon, 2006; McIvor, 2009; Rumelt, 1984). Starting from Macneil (1980), relational governance view (RGV) focuses on the role of informal governance mechanisms (such as trust, solidarity and norms) in reducing relational risk and facilitating communication and knowledge sharing (e.g., Dyer and Singh, 1998; Gorovaia and Windsperger 2011; Gulati, 1995; Li, Poppo and Zhou, 2010; Zaheer, McEvily and Perrone, 1998; Zaheer and Venkatraman, 1995). This study uses data from the supplier network in the Turkish automotive industry, which supports the complement perspective of formal and relational governance mechanisms. We argue that formal and relational governance mechanisms are complements in explaining joint action as relational outcome in network relationships (Heide and John, 1990; Kim, 1999; Zaheer and Venkatraman, 1995). Hence performing joint action through cooperation across organizational boundaries enhances the performance by generating relational rents (Gulati and Sytch, 2007; Kim, 1999).

Although the existing literature explains the role of formal and relational mechanisms in interorganizational networks from different theoretical perspectives, it suffers from an important theoretical deficit: Most of the studies using transaction cost theory (TCT) to investigate the role of governance mechanisms in network relationships focus on the control
function to reduce the risk of opportunism (e.g., Gulati, 1995; Hansen, Hoskisson and Barney, 2008; Mellewigt, Madhok and Weibel, 2007). However, the need for knowledge creation, knowledge integration and communication is high in business environments where the tasks of the network partners are highly interdependent (Galbraith, 1977; Gulati and Singh, 1998; Thomson, 1967). In this situation, formal and relational governance mechanisms have both a knowledge creation and coordination function (Dekker, 2004; Sánchez, Vélez and Álvarez-Dardet, 2012) that facilitates value creation.

Starting from this gap, this study extends the work on complementarity between formal and relational governance in network relationships (Arranz and Fdez. de Arroyabe, 2012; Goo et al., 2009; Li et al., 2010; Liu et al., 2009; Poppo and Zenger, 2002) by developing an integrative model based on RBT and RGV. In this framework, the role of trust as knowledge sharing and communication mechanism facilitating the use of formal governance mechanisms is compatible with the embeddedness view (Wincent, Thorgren and Anokhin, 2012). The embeddedness view argues that trust promotes relational risk reduction and knowledge sharing, due to cognitive and relational closeness, thereby enabling the network partners to use formal governance mechanisms in a more effective way.

The paper proceeds in the following way: Section two develops the theoretical model and the hypotheses. Section three presents the empirical study from the Turkish automotive industry. Finally, the paper concludes by providing some theoretical and managerial implications.
2 Theory and hypotheses

This section develops an integrative model on the relationship between formal and relational governance mechanisms in supplier networks, based on RBT and RGV (see figure 1).

2.1 Determinants of formal governance mechanisms

*Environmental uncertainty and relationship-specific investments.* Although many studies examine the relationship between environmental uncertainty and unilateral-specific investments in the TC framework (e.g., Bensaou and Anderson, 1999; Richardson, 1996), there is relatively little empirical research on the relationship between environmental uncertainty and bilateral-specific investments. Based on RBT, bilateral-specific investments generate relational rents through knowledge sharing and relational learning (Wu, Chang and Wu, 2006). In order to establish cooperative relationships, which are mutually beneficial in managing a complex and uncertain task environment, network partners make relationship-specific investments (Sawhney Celly, Spekman and Kamauff, 1999, p. 298). Higher environmental uncertainty requires a cooperative strategy inducing higher investments in co-specialized assets and interorganizational routines to generate relational rents (Asanuma, 1989; Dyer and Singh, 1998; Mahapatra, Narasimhan and Barbieri, 2010; Rangan, Corey and Cespedes, 1993). This reasoning is based on RBT, which offers an alternative explanation to the TCT (Vivek, Banwet and Shankar, 2008). Firms can realize competitive advantage (i.e., relational rents) through investing in co-specialized assets and interorganizational capabilities so as to effectively manage environmental uncertainty.

\[ H_1. \text{ Relationship-specific investments are positively related to environmental uncertainty.} \]
Relationship-specific investments and formal governance mechanisms. According to Dekker (2004), Gulati (1995) and Leiblein (2003), formal governance mechanisms are not only a control device, but also a knowledge creation and coordination device for value creation. Compared to TCT, RBT argues that partners use formal governance mechanisms (including standard operating procedures and rules) to improve knowledge creation and integration in order to realize relational rents. In particular, the requirement for coordinating the value chain activities in manufacturing and design processes increases in a complex and interdependent task environment, as the parties make bilateral-specific investments to jointly create new products (Buvik and Reve, 2002; Karimi, Somers and Gupta, 2004).

H2. Relationship-specific investments are positively related to the use of formal governance mechanisms.

2.2 Determinants of relational governance mechanisms

Environmental uncertainty and flexibility. Under high environmental uncertainty, manufacturers need to be able to adjust and upgrade their product technologies through co-development of their competencies together with suppliers in order to respond to changes in automotive component and downstream markets (Fredericks, 2005; Joshi and Stump, 1999; Wang and Wei, 2007). High environmental uncertainty associated with a complex task environment creates adaptation problems and increases the need for mutual adjustment between the network partners (Gulati, Lawrence and Puranam, 2005). Flexible adaptation to changing circumstances implies the use of governance mechanisms that enable the parties to renegotiate contractual agreements (Ivens, 2004; John and Weitz, 1988) and to make coordinated process adjustments (Wang and Wei, 2007; Wathne and Heide, 2004).

Based on RGV, Nooteboom et al. (1997) argue that in case of frequent environmental changes formal governance mechanisms are not efficient because of their inflexibility and
high adjustment costs. Flexibility serves as relational governance device to cope with adaptation problems, especially in a dynamic business environment (Cannon, Achrol and Gundlach, 2000; Kaufmann and Dant, 1992; Paulin and Ferguson, 2010). High flexibility facilitates sequential adaptations and mutual adjustment under high environmental uncertainty (Heide and John, 1992; Noordewier, John and Nevin, 1990; Wathne and Heide, 2004).

H₃. Environmental uncertainty is positively related to flexibility.

Flexibility and trust. Flexibility enables the parties to fill the planning gaps in the agreements as contingencies arise (Kaufmann and Stern, 1988; Wathne and Heide, 2004). Despite its adaptive advantages, high flexibility may increase relational risk under fewer formal safeguards (Young, Sapienza and Baumer, 2003). In this situation, a greater degree of trust mitigates conflicts by facilitating cooperative orientation in adjusting to changing environmental situations (Carson, Madhok and Wu, 2006; Madhok, 1995; Sako and Helper, 1998). In addition, trust facilitates interorganizational learning and knowledge sharing by intensifying interactions between network partners (Kale et al., 2000; Lee and Cavusgil, 2006). Consequently, trust increases the network partners’ ability to develop value-enhancing initiatives (Gibson and Birkinshaw, 2004; Paulin and Ferguson, 2010) under highly flexible adaptation processes.

H₄. Flexibility is positively related to trust between the network partners.

2.3 Formal and relational governance mechanisms and joint action

Relationship between trust and formal governance mechanisms. According to previous work, there exist two views on the relationship between formal governance mechanisms and trust in interorganizational networks. Based on TCT, trust and formal governance
mechanisms are control devices to reduce transaction costs. Hence a number of researchers have argued that trust as a relational governance mechanism substitutes for formal governance mechanisms (e.g., Cavusgil et al., 2004; Dyer, 1997; Ghoshal and Moran, 1996; Gulati, 1995; Macaulay, 1963; Nooteboom et al., 1997).

Under the complement perspective (e.g., Li et al., 2010; Liu et al., 2009), trust and formal governance mechanisms are primarily knowledge creation, knowledge integration and communication devices in order to generate relational rents and less a control mechanism against opportunism risk. Specifically, under high environmental uncertainty, network relationships require close cooperation between the partners by using formal and relational governance mechanisms in order to create and transfer new knowledge. Therefore, in uncertain and complex business environments, formal contracts demarcate the self-enforcing range of contracts as a “mutually agreed tolerance zone” (Luo, 2002, p. 905) that provides the adaptability to adjust to new situations, while trust facilitates communication and improves the access to new knowledge, consequently increasing the knowledge base for using more formal governance mechanisms (Cannon et al., 2000; Li et al., 2010).

H5. Trust is positively related to the use of formal governance mechanisms.

This reasoning is consistent with the embeddedness view (e.g., Granovetter 1985; Uzzi 1999; Wincent, Thorgren and Anokhin, 2012), which argues that trust promotes relational risk reduction and knowledge sharing thereby enabling the network partners to use formal governance mechanisms in a more effective way. However, we have to take into account that downsides of trust to partners exist in interorganizational relationships. Thorgren and Wincent (2011) argue that trust may create cognitive and relational closeness, which might negatively impact the effectiveness of formal governance by strengthening rigidities in organizational routines.
Joint action and governance mechanisms. What is the role of formal and relational governance mechanisms in achieving high relational rents through joint action? Network relationships that integrate the complementary elements of trust and formal governance mechanisms have static (i.e., transaction cost-reducing) and dynamic (i.e., value-creating) efficiency advantages (Cannon et al., 2000; Li et al., 2010). In particular, efficiency advantages of complementary governance mechanisms result from joint action between network partners (e.g., automaker and suppliers). Under high environmental uncertainty, network partners can better manage the sequential processes of the exchange relationship through interorganizational coordination and cooperation in order to realize high relational rents (Heide and John, 1990; Kim, 1999). Consequently, the complementary elements of formal and informal governance mechanisms increase the value-creating potential of the network through joint action.

H6a, b. Formal and relational governance mechanisms function as complements in performing joint action.

3 Research method

3.1 Data collection and sample

Data collection was carried out by a questionnaire-based survey. The empirical data was collected through a survey targeting the first tier suppliers in the Turkish automotive industry. The number of the first tier suppliers varies between 250-300 in the industry (TAYSAD brief report, 2003). 259 companies are registered in the Association of Automotive Parts & Components Manufacturers (TAYSAD) in the Turkish automotive industry, of which 207 are first tier suppliers. The questionnaire was sent out electronically to the sales managers/executives of 207 companies after they had been instructed by telephone. A total of 104 completed questionnaires were received. The effective response rate is 50%.
The potential for response bias was examined by comparing early versus late responses. The test of multivariate analysis of variance (MANOVA) shows no significant differences for the measures between early and late respondents (Wilk’s Lambda = 0.836, F = 1.500, df = 12, p = 0.127). The comparison provides evidence regarding the external validity of the study and generalizability of the findings. In addition, the possibility of common method variance was examined. Harman’s single factor test (Harman, 1967) was performed using both the exploratory factor analytic approach and the confirmatory factor analytic approach (Podsakoff, MacKenzie, Lee and Podsakoff, 2003; Podsakoff and Organ, 1986). The results of the unrotated factor solution of the 21-items reveal that the first factor does not account for the majority of the variance (26.14%) and there is no general factor. The SEM results of the test indicate that common methods bias is not a serious problem in this study, with the goodness of fit indices for this model indicating poor fit with the data ($\chi^2 = 959.27$, df = 189, p = 0.000, RMSEA = 0.199, AGFI = 0.43, GFI = 0.53, CFI = 0.59; IFI = 0.60, SRMR=0.16; NFI=0.53).

3.2 Measurement

*Formal governance mechanisms (FORM).* Formalization of operating procedures and controls for rule enforcement are used as formal governance mechanisms. Based on Heide (2003) and John (1984), formalization describes the degree to which fixed rules and procedures regulate activities in the relationships; (1) our dealings with this manufacturer are subject to many rules and procedures stating how various aspects of the relationship are to be handled, (2) this manufacturer places orders periodically according to a formalized routine, (3) deliveries are made on fixed days and times. In addition, the items of control for rule enforcement and surveillance (John, 1984) are; (4) we feel that we are monitored to be sure that we follow all the rules of the contract agreement, (5) there are strong penalties for
violating this manufacturer’s procedures. These five indicators were measured on a 7-point Likert scale ranging from strongly disagree to strongly agree (Cronbach’s alpha = 0.74).

**Trust (TRUST).** Trust is measured with three items consistent with the study of Carson et al. (2006). The items reflect the extent to which the parties expected from each other to cooperate; (1) the parties expected that conflicts would be resolved fairly, even if no guidelines were given by our formal agreements, (2) when an unexpected situation arose, the parties had a mutual understanding that a win-win solution would be found, even if it contradicted the formal agreements, (3) both parties understood that problems arising during the relationship would be solved jointly through communication and cooperation rather than just reference to the formal agreements. These three indicators were measured on a 7-point Likert scale ranging from strongly disagree to strongly agree (Cronbach’s alpha = 0.85).

**Joint action (JOINT).** Following Heide and John (1990), Joshi and Stump (1999) and Zaheer and Venkatraman (1995), this construct is measured with four items to capture the extent to which the parties jointly undertake activities. The JOINT scale, referring to cost-cutting, planning and training as well as to general level of joint action in the relationship, was assessed on a 7-point Likert scale (Cronbach’s alpha = 0.81).

**Environmental uncertainty (EU).** This study builds on Bensaou and Venkatraman’s construct of environmental dynamism as the rate of change in product arising from technological innovations (Bensaou and Venkatraman, 1995; Karimi et al., 2004). Environmental uncertainty associated with dynamism of task environment is measured with three items that refer to a product’s technical complexity, maturity of the underlying technology and the engineering content, as Bensaou and Venkatraman (1995) suggest. These indicators were measured using 1-7 semantic differential scales for a component ranging from: (1) technically simple to technically complex, (2) based on mature technology to new
technology, (3) low engineering effort and expertise to high engineering effort and expertise (Cronbach’s alpha = 0.84).

*Relationship-specific investments (RSI).* Consistent with the studies of Asanuma (1989) and Dyer and Singh (1998), the items for RSI are; (1) we are substantially involved in product development, (2) we spend much time in developing the specifications, (3) we spend much time and effort in developing manufacturing and designing processes, (4) manufacturing of this product has created a specific expertise dedicated to our relationship. These four indicators are measured on a 7-point Likert scale ranging from strongly disagree to strongly agree (Cronbach’s alpha = 0.79).

*Flexibility (FLEX).* Flexibility refers to the willingness of the parties to make adjustments to the initial agreement in order to adapt new knowledge (Heide and John, 1992; Ivens, 2004, 2005; Joshi and Stump, 1999; Noordewier et al., 1990; Young et al., 2003). Two items reflecting the partners’ ability to make adjustments in accordance with changing circumstances are used to measure flexibility (Heide and John, 1992; Young-Ybarra and Wiersema, 1999). These items are; (1) when an unexpected situation arises, the parties would rather modify the agreement than hold each other to the original terms, (2) flexibility in response to requests for changes is a characteristic of this alliance. These indicators were measured on a 7-point Likert scale ranging from strongly disagree to strongly agree (Cronbach’s alpha = 0.81).

### 3.3 Validation of measures

The research uses exploratory and confirmatory factor analysis for assessing the construct validity. In the research model, the exploratory factor analysis yields a six-factor solution accounting for 71.23% of the cumulative variance. According to the Kaiser rule (Kaiser, 1960) the factors are retained with eigenvalues greater than 1. Factor loadings of the
21 items are above 0.40 (Hair, Anderson, Tatham and Black, 1998), ranging from 0.55 to 0.89 (Table 1).

Confirmatory factor analysis (CFA) was conducted. The measures show a good fit of the model (Goodness-of-fit indices are; $\chi^2 = 216.25$, df = 167, RMSEA = 0.05, GFI = 0.83, CFI = 0.95, IFI = 0.95, NNFI = 0.93; SRMR = 0.08). In addition, CFA was conducted to test for discriminant validity. The results of CFA show that the correlations between the constructs are relatively low, ranging from 0.23 to 0.66 (Table 2), indicating discriminant validity (Kline, 1998).

4 Results

The theoretical model was estimated using structural equation modelling (SEM) with LISREL 8.53 (Jöreskog and Sörbom, 2002) (see Figure 2). The model has an adequate fit (Hair et al., 1998) ($\chi^2 = 227.89$; df = 174; $\chi^2$/df = 1.31; RMSEA = 0.055; CFI = 0.95; NNFI = 0.94; IFI = 0.95; SRMR = 0.089) with the exception of the GFI index (0.083) which may suffer from problems like severe downward bias for large models and models with small sample size (Lui, Wong and Liu, 2009, p. 1218).
Figure 2 summarizes the results of the SEM analysis for the model. Consistent with the predictions of H1 and H3, the results indicate that the relationship between EU and RSI ($\beta= 0.67$, $p<0.01$) and the relationship between EU and FLEX ($\beta= 0.32$, $p<0.01$) are positive and significant. In addition, the hypothesized relationship between RSI and FORM ($\beta= 0.32$, $p<0.01$) and FLEX and TRUST ($\beta= 0.63$, $p<0.01$) are positive and significant. These findings support H2 and H4. According to H5, TRUST is positively related with FORM ($\beta= 0.23$, $p<0.05$). Furthermore, based on H6a, H6b, the relationship between FORM and JOINT as well as between TRUST and JOINT are positive and significant ($\beta= 0.36$, $p<0.01$; $\beta= 0.29$, $p<0.05$).

Consequently, the results provide support for the complement perspective of formal and relational governance mechanisms.

### 5 Discussion and implications

#### 5.1 Discussion

The aim of this study is to explain the complementary relationship between formal and relational governance mechanisms in supplier networks by developing an integrative framework based on resource-based and relational governance perspectives. Table 3 summarizes the results of the empirical analysis.

INSERT TABLE 3 ABOUT HERE

The results confirm the complementary relationship between formal and relational governance mechanisms based on hypotheses derived from RBT and RGV. First, consistent with H1, the data indicate that increasing environmental uncertainty encourages relationship-specific investments to establish a cooperative relationship between supplier and automaker in order to realize high relational rents. Second, consistent with H2, the findings of this study
indicate that formal governance mechanisms increase with relationship-specific investments (Dekker, 2004). Hence under high relationship-specific investments, formal governance mechanisms facilitate the coordination of interdependent tasks by improving knowledge sharing and integration between the network partners. Third, consistent with H₃, flexibility varies positively with the network partners’ ability to adjust to environmental and technological changes. Fourth, the data support the hypothesis (H₄) that flexibility is positively related to trust. Highly flexible adaptation processes result in trust in order to facilitate mutual cooperation under high environmental uncertainty. Fifth, the results also confirm H₅, which claims that trust increases knowledge sharing and problem-solving and hence facilitates the use of more formal governance mechanisms. Finally, the results support the hypotheses (H₆a and H₆b) that formal and relational governance mechanisms function as complements to increase joint action between network partners. Overall, this study supports the complement perspective of formal and relational governance mechanisms in the context of buyer-supplier relationships in the Turkish automotive industry. In an uncertain business and technological environment, trust in conjunction with formal governance mechanisms facilitate knowledge transfer and communication between the network partners and thus increase the level of joint action in managing sequential interorganizational adaptation processes.

These findings add to the recent literature examining the complement perspective (de Man and Roijakkers, 2009; Goo et al., 2009; Li et al., 2010; Liu et al., 2009; Luo, 2002; Poppo and Zenger, 2002). The study extends Poppo and Zenger (2002) by using resource-based and relational governance theory to explain the antecedents of formal and relational governance mechanisms. Based on the resource-based theory, relationship-specific investments are less a transaction cost variable but primarily a strategic variable that functions as mediator between environmental uncertainty and formal governance
mechanisms. In addition, the findings of this study also add to Luo (2002) who focuses on a relational perspective but does not investigate uncertainty and asset specificity as contingency factors of governance mechanisms. Liu et al. (2009) use transaction cost and relational perspectives to explain the complementarity relationship between formal and relational mechanisms of governance. This study adds to Liu et al. (2009) by explaining specific investments as mediator variable based on the resource-based theory. The findings of the study also relate to Goo et al. (2009). They investigate the substitution/complementarity relationship between formal and relational governance mechanisms in information technology outsourcing. Generally, the results of Goo et al. (2009) support the complement perspective, with one exception regarding contract provisions for dealing with future contingencies. This study extends Goo et al. (2009) by using a structural equation model, instead of the interaction effect method, to examine the effects of formal and relational governance mechanisms on joint action. Based on transaction cost and relational perspectives, Li et al. (2010) argue that formal governance mechanisms enhance the positive effect of relational governance mechanisms on knowledge acquisition. However, their study does not investigate uncertainty and relationship-specific investments as antecedents of governance mechanisms. Finally, the findings of this study are also consistent with de Man and Roijakkers (2009) who argue that in high risk situations (i.e., high environmental uncertainty) companies use formal and relational governance mechanisms in a complementary way.

5.2. Implications for Theory and Practice

This research makes a contribution to the literature on governance of interorganizational networks, an area that has received increasing attention from the organizational economics and strategic management scholars in recent years. In particular,
this study presents a complement perspective of formal and relational governance mechanisms in supplier networks by using resource-based and relational governance theory. While the existing transaction cost literature argues that governance mechanisms have primarily a control function in reducing opportunism risk (e.g., Hansen et al., 2008; Mellewigt et al., 2007), this study shows that the governance mechanisms have a knowledge creation and coordination function which results in a high level of relational outcome through joint action. Therefore, compared to previous studies which support the complement perspective by using different explanations (e.g., Arranz and Fdez. de Arroyabe 2012; Goo et al., 2009; Li et al., 2010; Liu et al., 2009; Luo, 2002; Poppo and Zenger, 2002), this study offers a new theoretical framework by integrating resource-based and relational governance explanations.

Furthermore, compared to the existing transaction cost literature, the integrative model shows that relationship-specific investments function as mediator between environmental uncertainty and formal governance mechanisms. According to the resource-based theory, high relationship-specific investments result from a cooperative strategy to manage environmental uncertainty in order to increase relational rents. The mediator perspective of relationship-specific investments also deviates from the marketing channel literature that explains specific investments as governance mechanism to mitigate opportunism (e.g., Brown, Dev and Lee, 2000; Liu et al., 2009; Wathne and Heide, 2000).

The study also has some implications for the management of interorganizational networks: First, complementarity of formal and relational governance mechanisms increases the governance capability of the network. Specifically, in uncertain business environments, the network partners can realize mutually beneficial outcomes (i.e., higher relational rents) by exploiting the complementary elements of formal and relational governance. On the one hand, formal governance mechanisms increase value creation by aligning the partners’ value
chain processes and routines across organizational boundaries. On the other hand, by increasing cooperative behaviour between the network partners trust facilitates the knowledge transfer and communication, and thereby increases the knowledge base for using more formal governance mechanisms.

Second, according to our integrative framework environmental uncertainty influences the cooperative strategy of the network partners. Higher environmental uncertainty encourages the use of complementary resources and capabilities in designing, manufacturing and logistics in order to increase relational rents. For instance, automakers (or assemblers) exploit the suppliers’ knowledge base to reduce the cost of technological innovation and quality control. Therefore, high relationship-specific investments in product and process development and interorganizational routines result in strategic interdependence and mutual commitment for both suppliers and assemblers. Consequently, if the network partners expect high value creation due to relationship-specific investments, they should follow a cooperative strategy to realize the relational rent potential.

5.3 Limitations and future research

The study has some limitations that create opportunities for future research. First, the research design uses a single source of respondents. Future studies are needed in order to provide multiple sources of respondents from both manufacturers and suppliers in automotive supply chain to reduce the possibility of common methods bias while increasing the generalizability of the results. For instance, the use of formal and relational governance mechanisms may result in asymmetric benefits for the network partners (Gopal and Koka, 2012). Second, the empirical research is based on the automotive industry in Turkey with a different institutional environment compared to the main previous research results. Different institutional environments may influence the use of formal and relational governance
mechanisms (Li, Xie, Teo and Peng, 2010; North, 1990; Peng, Wang and Jiang, 2008). Hence future studies have to investigate the impact of the institutional environment on the relationship between formal and relational governance mechanisms by collecting data from different countries. Third, this study examined the role of formal and relational governance mechanisms in the automotive industry which is characterized by a complex and dynamic economic environment. Environmental characteristics may influence the relationship between formal and relational governance mechanisms (e.g., de Man and Roijakkers, 2009). Future research has to focus on other industries with different environmental characteristics to verify the generalizability of the results. Fourth, Arranz and Fdez. de Arroyabe (2012) argue that the performance consequences of formal and relational governance mechanisms vary with the projects characteristics. Formal governance mechanisms are more effective in exploitation projects and relational governance mechanisms in exploration projects. Future research has to include the project characteristics as contingency factor when testing complementarity between formal and relational governance mechanisms. Fifth, since alliances evolve, formal and relational governance mechanisms might vary with the relationship cycle (Klein Woolthuis et al., 2005; Vivek et al., 2008). Unfortunately, the cross-sectional nature of the data does not allow for testing how the relationship cycle may influence the complement versus substitute perspective of formal and relational governance mechanisms. Consequently, future research has to answer the question as to the extent that the stage of the network relationship influences the use of governance mechanisms. For this purpose a longitudinal design will be beneficial.

Overall, we can conclude that this study extends the work on formal governance and trust in interorganizational networks by presenting an integrative model which combines resource-based and relational governance perspectives. We believe that the resource-based and relational governance theory provide a promising theoretical framework for explaining
the role of knowledge creation and integration in interorganizational networks. Hence we hope that our contribution inspires further research on the role of formal and relational governance mechanisms in interorganizational networks. Specifically, the question about the determinants of the relationship between formal and relational governance mechanisms must be addressed by using different theoretical lens and empirical settings.
References


Figure 1. Research model.
Table 1. Factor analytic evidence for the construct validity of the six-factor subscale scores

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint action</td>
<td>We work jointly with this manufacturer on all cost-cutting issues that may affect our relationship.</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>Our long-range plans are formed jointly with this manufacturer.</td>
<td>0.85</td>
</tr>
<tr>
<td></td>
<td>We work jointly with this manufacturer in training our employees.</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>We have developed a work environment wherein both we and this manufacturer feel part of each other’s organization.</td>
<td>0.69</td>
</tr>
<tr>
<td>Environmental uncertainty</td>
<td>Technically simple to technically complex.</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Based on mature technology to new technology.</td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td>Low engineering effort and expertise to high engineering effort and expertise.</td>
<td>0.72</td>
</tr>
<tr>
<td>Trust</td>
<td>We and this manufacturer expected that conflicts would be resolved fairly, even if no guidelines were given by our formal agreements.</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>When an unexpected situation arose, we and this manufacturer had a mutual understanding that a win-win solution would be found, even if it contradicted the formal agreements.</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Both we and this manufacturer understood that problems arising during the relationship would be solved jointly through communication and cooperation rather than just reference to the formal agreements.</td>
<td>0.72</td>
</tr>
<tr>
<td>Formal governance mechanisms</td>
<td>Our dealings with this manufacturer are subject to many rules and procedures stating how various aspects of the relationship are to be handled.</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>This manufacturer places orders periodically according to a formalized routine.</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>Deliveries are made on fixed days and times.</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>We feel we are watched to be sure that we follow all the rules of the contract agreement.</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>There are strong penalties for violating this manufacturer’s procedures.</td>
<td>0.75</td>
</tr>
<tr>
<td>Relationship-specific investments</td>
<td>We are substantially involved in product development.</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>We spend much time in developing the specifications.</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>We spend much time and efforts in developing manufacturing and designing processes.</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>Manufacturing of this product has created a specific expertise dedicated to our relationship.</td>
<td>0.65</td>
</tr>
<tr>
<td>Flexibility</td>
<td>When an unexpected situation arises, the parties would rather modify the agreement than hold each other to the original terms.</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>Flexibility in response to requests for changes is a characteristic of this alliance.</td>
<td>0.80</td>
</tr>
</tbody>
</table>
Table 2. Correlations for CFA analysis and descriptive statistics

<table>
<thead>
<tr>
<th>Constructs</th>
<th>No. of items</th>
<th>Mean</th>
<th>S.D.</th>
<th>EU</th>
<th>RSI</th>
<th>FLEX</th>
<th>FORM</th>
<th>TRUST</th>
<th>JOINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>3</td>
<td>5.05</td>
<td>1.34</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSI</td>
<td>4</td>
<td>4.65</td>
<td>1.53</td>
<td>0.66**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FLEX</td>
<td>2</td>
<td>5.20</td>
<td>1.44</td>
<td>0.27**</td>
<td>0.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FORM</td>
<td>5</td>
<td>5.36</td>
<td>1.11</td>
<td>0.31**</td>
<td>0.34**</td>
<td>0.24*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUST</td>
<td>3</td>
<td>5.10</td>
<td>1.55</td>
<td>0.24*</td>
<td>0.13</td>
<td>0.61**</td>
<td>0.25**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>JOINT</td>
<td>4</td>
<td>4.12</td>
<td>1.44</td>
<td>0.33**</td>
<td>0.20</td>
<td>0.23*</td>
<td>0.49**</td>
<td>0.41**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01
Figure 2. Standardized estimates of the model.

*p<0.05, **p<0.01
Table 3. Summary of hypotheses

<table>
<thead>
<tr>
<th>Number</th>
<th>Hypothesized relationship</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBT*:H₁</td>
<td>environmental uncertainty → relationship-specific investments</td>
<td>supported</td>
</tr>
<tr>
<td>RBT: H₂</td>
<td>relationship-specific investments → formal governance mechanisms</td>
<td>supported</td>
</tr>
<tr>
<td>RGV*:H₃</td>
<td>environmental uncertainty → flexibility</td>
<td>supported</td>
</tr>
<tr>
<td>RGV: H₄</td>
<td>flexibility → trust</td>
<td>supported</td>
</tr>
<tr>
<td>RGV: H₅</td>
<td>trust → formal governance mechanisms</td>
<td>supported</td>
</tr>
<tr>
<td>H₆a/₆b</td>
<td>formal governance mechanisms and trust → joint action</td>
<td>supported</td>
</tr>
</tbody>
</table>

*RBT - resource-based view; RGV - relational governance view