SUPPLIER-CUSTOMER COOPERATION, RELATIONSHIP DEVELOPMENT AND SUPPLIER'S PROFITABILITY

Marko Kohtamäki and Jukka Vesalainen

ABSTRACT

By focusing on the effects of relational capital, relationship structures and suppliers' relationship specific investments on customer relationship development and also on the effect of customer relationship development on suppliers' profitability, the study contributes to the discussion on the benefits of networking in an industrial setting. The study analyses a quantitative dataset of 84 small and medium-sized subcontractors and their 252 customer-relationships. The results show 1) the direct effects of relational capital and relationship specific investments on relationship development, 2) the interaction effect between relationship structures and relational capital and 3) the impact of relationship development on suppliers' profitability.

Keywords: Relationship integration, relationship performance, company performance, industrial networks, business relationships

INTRODUCTION

Value chain integration has been a popular topic for both practitioners and researchers since the late 1980s. Over the past two decades, researchers have shown an increasing interest in value chain integration especially in the research field of buyer – seller relationships, which are seen to develop from "arm's length relationships" into long-term partnerships (Thorelli, 1986). Scholars of organizational economics, organization theory, strategic management, relationship marketing and supply chain management have all addressed the theme, each from their specific viewpoints. Findings from the prior empirical research show that value system integration has certain advantages in comparison to any purely market-based organization of the value system (Van der Vaart & Van Donk, 2008; Vickery, Jayaram, Droge & Calantone, 2003).

Research on supply chain management has revealed operational performance improvements especially in terms of better quality, shorter lead times and JIT delivery improvements (Terpend, et al. 2008). Marketing research from relationship marketing and customer relationship management has focused on joint value creation between the buyer and seller in integrated business relationships (Walter, Ritter and Gemünden, 2001). Research originating from the new organizational economics, especially the relational contracting approach (MaCaulay, 1963) have built on relational capital, and especially on trust, as a factor that decreases transaction costs (Sako, 1992) and enables relationship learning (Selnes and Sallis, 2003). In this study we explain relationship development by relational capital, relationship structures and relationship specific investments and furthermore, supplier's profitability by relationship development.

A supplier-customer relationship is a complex form of organization involving both learning and innovation to jointly create value, but also self-interest bargaining to claim value being created (Ghosh & John, 1999; Subramani, 2004). Due to the fact that global competition has increased buyers' interest in using market mechanism to govern suppliers, and that buyer-supplier relationships are often asymmetric with the power-dependence position favoring the large industrial customer, there is a reason to be concerned for the profitability and survival of smaller suppliers (Gomes-Casseres, 1997; Forrest, 1990). However, prior studies have shown relatively little interest in suppliers' performance (and especially that of small and medium sized suppliers) within value systems. For example, a recent literature review of small business networking (Street & Cameron, 2007) lists and analyzes 218 research papers published between 1990 and 2002. The number includes only a few papers dealing with small/large firm relationships, and only a few of those detail SME successes in partnerships with a larger customer company. For example Meyer et al. (1997) found that deeper relationships with larger firms of high integrity and trustworthiness may be advantageous for smaller companies in terms of survival. Instead, studies analyzing the potential pitfalls of asymmetric SME/large firm partnerships are relatively more common. The dangers of being appropriated by larger firms have been well documented in prior studies (Alvarez & Barney, 2002, 2001; Gomes-Casseres, 1997; Forrest, 1990). There is also some evidence that overdependence on any single relationship can weaken a small firm's overall per-

formance (Miles, Preece & Baetz, 1999; Larson, 1991). Hence, there is little evidence in on the impact of customer partnership development on suppliers' profitability.

Prior research provides some evidence of the antecedents of relationship development. Previous scholars emphasize the role of relational capital, relationship structures and relationship specific investments. Relatively little evidence exists on the effects of these factors on relationship development. Even if strong case-based evidence exists (Dyer and Hatch, 2004; Liker and Choi 2000; Sako, 2004), previous literature lacks quantitative empirical evidence on the role of these factors on relationship development (Holmqvist 2003). Particularly sparse is the research concerning the moderating role of relational capital, which we also intend to study. We suggest that relational capital moderates the link between relationship structures, relationship specific investments and relationship development.

Our research task is two-fold: Firstly, we explain relationship development by relational capital, relationship structures and relationship specific investments, and study whether relational capital moderates the relation of relationship structures, relationship specific investments and relationship development. Secondly, we intend to reveal the advantages of supplier's engagement in integrated partnerships with their key customers by studying the connections between suppliers' profitability and the development of suppliers' most important customer relationships. Moreover, we construct our research questions as follows: 1) to what extent does integration increase relationship development (in terms of improved costs efficiency, quality, delivery accuracy and the use of capital), and 2) to what extent does relationship development affect a supplier's profitability? Our data are drawn from 84 companies and 253 business relationships from the Finnish metal and electronics industries. To test our research model, we apply hierarchical regression analysis and a moderation model. We are attempting to contribute to the body of knowledge found in the literature of value system integration in general. Our special interest is in manufacturing partnerships between smaller suppliers and larger industrial customer firms operating mostly in international markets.

The article is structured as follows: after these introductory remarks, the second section reviews the literature on relationship integration and sets out five hypotheses on the impact of relationship integration on relationship performance and the effect of relationship performance on a supplier's profitability. The third section describes the conceptualization and methodology of this study and the fourth section presents the results of the empirical study. After the results section, a discussion follows underlining the implications for further research as well as for managerial practice.

THEORY DEVELOPMENT AND HYPOTHESES

The present study focuses on the effects of suppliers' customer relationship integration on relationship development and furthermore, on suppliers' profitability. We suggest that relationship integration, in other words, relational capital, relationship structures and relationship specific investments facilitate relationship development, which furthermore increases relationship performance and eventually suppliers' profitability.

Prior scholars have conducted only a little empirical research on the benefits of suppliers' customer relationship integration (Kalwani & Narayandas, 1995; Barringer, 1997; Vickery et al. 2003; Kulp, Lee and Ofek, 2004; Subramani, 2004; Terpend, et al, 2008). The study most closely akin to our research interest is that of Kalwani & Narayandas' (1995) on the advantages of long-term customer relationships to suppliers. According to their study, suppliers favoring long-term customer relationships outperform suppliers using a transactional mode in sales growth, inventory turnover and profitability (ROI).

Some of the previous studies suggest that an economic downturn favours the suppliers using long-term partnerships. For example, the empirical results from Frohlich and Westbrook (2001) show that firms that are integrated with both their up- and downstream companies perform better than non-integrated firms in terms of marketplace measures (market share, profitability, ROI), productivity indicators (e.g. manufacturing lead time, delivery lead time and labor productivity), and non-productivity indicators (such as customer service, customer satisfaction and supplier quality). Also Kulp et al. (2004) find that manufacturers who employ various information integration techniques benefit from these practices in terms of profit margins. It seems that collaborative practices especially, such as vendor-managed-inventory, somewhat explain manufacturer profit margins.

The present study argues that supplier's increased profits partially result from developments that occur in key-customer relationships. The concept of relationship development is grounded in network and relationship learning research and thus based on the organizational learning theory. Prior network learning research defines learning as either cognitive or behavioral change (Knight, 2002). In this study, we apply the latter and define learning as relationship development, which is measured as an outcome variable in terms of development in productivity, quality, order-delivery accuracy, and efficiency in the use of capital. Prior studies have emphasized the role of learning in business networks arguing that since partnerships are in definition difficult to switch, organizations need management skills to support learning in relationships (Adler, 2001; Kohtamäki 2009). Thus, due to the recognized significance of this phenomenon in business networks, the number of studies conducted in this field has increased in recent years (Holmqvist, 2003). However, prior research literature consist only a limited number of empirical studies analyzing the antecedents of learning in business relationships and networks. For example, Chang and Gotcher (2007) studied the effects of relational capital and relationship specific investments on relationship learning. According to their study, both relational capital and relationship specific investments do increase relationship learning, and relational capital does facilitate the relationship between relationship specific investments and learning. Also Claro, Hagelaar and Omta, (2003; See also Kohtamäki et al., 2006) ended up emphasizing the significance of trust as they showed that trust increases joint problem solving and furthermore that joint problem solving explains supplier's sales growth and improvements in customer satisfaction.

The impact of relational capital, relationship structures and relationship specific investments on relationship development

Some prior studies have analyzed the effects of relational capital and, in particular, trust on relationship learning (Chang and Gotcher, 2007; Selnes and Sallis, 2003) and suggest that relational capital is an important antecedent of learning. Relational capital references trust, open interaction and a feeling of shared destiny (Adler, 2001). The concept of relational capital is based on the social capital approach (Tsai and Ghoshal, 1998) and is argued to affect business-relationships in numerous ways. According to prior studies relational capital and in particular trust may decrease transaction costs, increase relationship commitment, knowledge sharing and learning (Claro et al., 2003; Håkansson, Havila and Pedersen, 1999; Sako, 1992). In this study, we focus on the impact of relational capital on relationship development. The effect that relational capital has on learning is based on the interaction that trust facilitates and which then enables new knowledge creation and sharing (Dyer and Chu, 2003; Kale, Singh and Perlmutter, 2000; Larson, Bengtsson, Henriksson and Sparks, 1998). As relational capital has also been found to increase the commitment to the relationship (Narayandas & Rangan, 2004), we conclude that relational capital may play an important role in a joint development process. Thus, by increasing information sharing and relationship commitment, relational capital facilitates joint development processes and also development and learning within the supplier-customer relationship. Thus:

> *H1a. The greater the extent of relational capital, the higher the level of relationship development.*

The concept of relationship structures is based on organization theory. We define relationship structures as structural bonds between the supplier and customer, that is, IT-systems, process descriptions and ways of working established between the companies (see also Zinn and Parasuraman, 1997; Bensaou and Venkatraman, 1995; Kothandraman and Wilson, 2000). Prior research literature lacks empirical evidence on the impact of relationship structures on relationship development, but some studies seem to suggest that relationship structures facilitate social interaction between network partners that furthermore has a positive impact on learning in relationships and networks (Cai, Yang and Hu, 2008; Dyer and Nobeoka, 2000; Preiss and Murray, 2005). For example, Adler and Borys (1996) argue that enabling hierarchical structures may support interaction through regularly arranged development meetings or supplier audits. Formal structures provide a platform for interaction that may increase knowledge sharing, enable joint problem solving and hence facilitate relationship development (Cai et al. 2008; Claro et al., 2003).

> *H1b. The greater the extent of structural integration in the relationship, the higher the level of relationship development.*

Prior studies suggest that relationship development often requires investments that are relationship specific (Liker & Choi 2000). The present study defines supplier's relationship specific investments as assets that are

dedicated to a particular relationship and are thus relatively difficult to apply in other customer relationships (Dyer and Singh, 1998; Williamson, 1985). According to the resource-based view, various resources, such as tools and machinery, human capital or organizational culture, create an important source of competitive advantage (Dyer and Singh, 1998). Based on the resource-based view, researchers argue that relationship specific investment may strengthen the supplier's resource-base and engage the supplier in a process of relationship development as the deployment of resources requires learning from the organizational members (Chang and Gotcher, 2007; Liker and Choi 2000). Since suppliers' relationship-specific investments strengthen the suppliers' resource-base, they may also improve the suppliers' ability to serve their customers. In addition, relationship specific investments may facilitate relationship development by engaging the organizational members from both sides of the relationship into a learning process in which the investments are deployed (Liker and Choi, 2000). For example, Liker and Choi (2000) argue that deployment of resources sets learning targets for organizational members that may furthermore facilitate learning. Thus, we conclude that relationship specific investments may have a positive effect on relationship development.

> H1c. The greater the extent of relationship specific investments, the higher the level of relationship development.

The moderating role of relational capital on the relationship between relationship specific investments, structural capital and relationship development

Prior studies suggest that learning requires interaction facilitated by the relationship structures (Aulakh & Kotabe 1997). However, relationship structures may also turn out to be slow and coercive, structures that actually prohibit interaction, information sharing and learning. Following on the argument of Adler and Borys (1996) that bureaucratic structures may be either coercive or enabling, we suggest that it is actually the moderating role of relational capital, that is, trust, open interaction and a feeling of shared destiny, that gives the enabling form for hierarchical relationship structures that furthermore facilitate facilitates relationship development (Adler, 2001). This argument is based on those prior studies that suggest that relational capital enables positive, enriching knowledge creation and sharing within the hierarchical structures that create the forum for learning (Chang & Gotcher, 2007, Tsai & Ghoshal, 1998). Within the hierarchical structures, it is the relational capital that alleviates the fears of partner's possibly opportunistic behaviour and releases those intellectual resources of both partners to joint value creation. Therefore, we suggest that relational capital moderates the relationship between relationship structures and relationship development.

> H2a. The greater the extent of relational capital, the greater is the impact of structural capital on relationship learning.

Scholars have also argued that the impact of relationship specific investments on relationship development ought to be facilitated by relational capital (Chang & Gotcher 2007). The purpose of relationship specific investments is to create valuable resources for the relationship. However, according to resource-based theory, resources per se are important, but the true value is created through the deployment of those resources. That is, resources lead to capabilities and capabilities influence performance (Barney, 1991, Wernefelt, 1984). Since in the supplier-customer relationship, customer has an important role in the deployment of supplier's resources, relational capital is needed to support open information sharing, before the investment is made, to ensure that resources fit to the needs of the customer and after the investment, that the new resources are being utilized to a full extent (Joshi & Stump, 1999). Both of these factors, that is, the fit of the resources being invested and customer's knowledge about invested resources, support relationship development. Therefore we argue that since relational capital facilitates open information sharing, it may have a moderating role between relationship specific investments and relationship development (Adler, 2001; Chang and Gotcher, 2007; Tsai & Ghoshal, 1998).

> H2b. The greater the extent of relational capital, the greater is the impact of the relationship specific investments on relationship learning.

**Relationship development and supplier's profitability**

Scholars argue that the discussion about the benefits of asymmetric customer partnerships to small suppliers lacks empirical evidence. However, prior studies show evidence of the impact of supply chain integration on the performance of large industrial customers (Van der Vaart and Van Donk, 2008). The theory of partner-

ships and networks suggests that this type of inter-organizational form should provide benefits for both the customer and small supplier by decreasing transaction costs, facilitating learning and hence by increasing performance in the relationship (Sako, 1992). Following on from the literature on partnerships and networks, the present study suggests that while relational capital, relationship structures and relationship specific investments facilitate relationship development (Chang and Gotcher, 2007), relationship development should in the spirit of win-win increase also small suppliers' gross margins and profits. Groves and Valsamakis (1998) suggest that if the relationship between customer and small supplier is fair and based on a win-win principle, the development of the customer relationship should decrease the costs of the relationship and hence positively affect also the supplier's profit. Hence, we suggest the following hypothesis:

> H3. The greater the extent of relationship development in customer relationships, the higher is the level of supplier profitability.

The present study argues that while relational capital, relationship structures and relationship specific investments may explain relationship development, relationship development also positively influences suppliers' profitability. Figure 1 presents the research model and summarizes the hypotheses of this study.

Figure 1
Research model of this study
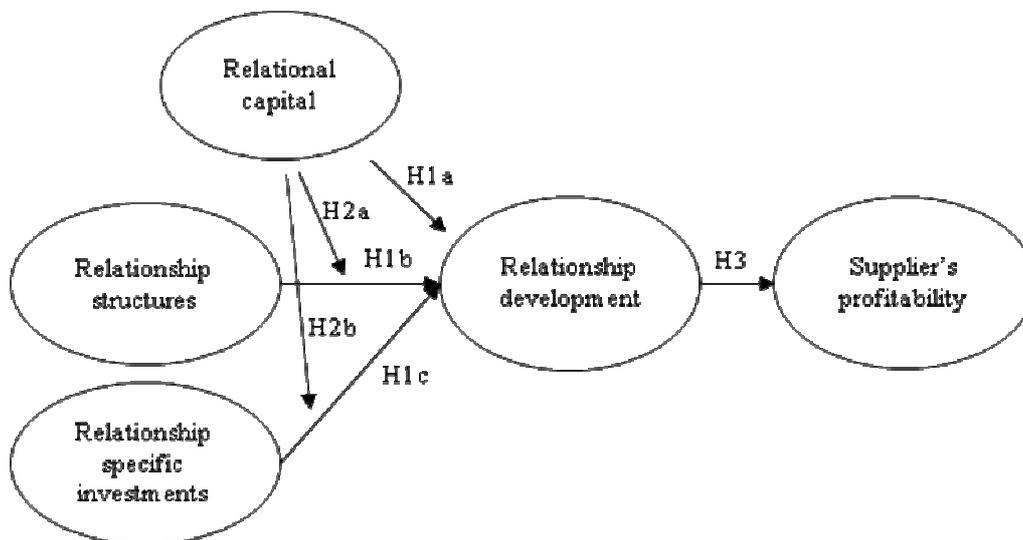
RESEARCH METHODOLOGY AND DATA

Data collection, response pattern and respondents

The data were collected from 84 business units in the Finnish metal and electronics industries in autumn 2006. The sample data consisted of details of 252 customer relationships of 84 subcontracting companies. The data sample was drawn from a database operated by the Finnish Technology Industry, which consists of 1060 of industrial companies. This counts for 56.3 % of the whole population of firms in the Finnish metal and electronics industry concerning the firms employing more than 10 employees. Out of the original database (1060) 342 companies were identified as subcontractors in cooperation with industry experts from the Finnish Technology Industry. Our aim was to identify a set of firms which as good as possible represent industrial subcontractors. The task was not easy, because there were lot of firms doing subcontracting only as a part of their total business activity. The pre-selection was, however, quite successful and only 5 cases of the received responses were omitted due to low relative amount of subcontracting of total turnover. Thus, the data sample consisted only of small or medium-sized subcontracting companies. Owing to the fact that the relative amount of subcontractors' sales to the three most important customers was 66.5 % on average, we could expect relationships to have considerable impact on subcontractors' performance.

The study used an electronic web-based questionnaire to collect the data. Data collection was supported by telephoning the respondents at random. In total, 150 companies were contacted by phone, and the methods produced a very satisfactory response rate of 25 %. However, the potential effect of non-respondent bias was controlled by comparing the first one third of respondents to the last one third on the key study variables and the available demographic variables (Armstrong & Overton, 1977; Werner, Praxedes, & Kim, 2007). Since the two groups of early and late respondents did not differ statistically significantly, we conclude that the data is satisfactorily free from non-response bias.

Following the *key informant approach* (Huber & Power, 1985), we selected as the informants of this study company managing directors, who was asked to analyse three business-relationships which produced 252 supplier-customer relationships. The respondents chose which business relationships to evaluate having been asked to choose the customer relationships they felt were the most important for their companies. Thus, the present study defined "partnership" as an important long-term customer-relationship (MaCaulay, 1963; Ploetner and Ehret, 2006).

The average size of suppliers was 63,0 employees ranging from 9 to 278. The customer companies were typically large companies (over 500 employees) doing business in international markets. Only in two cases all the three most important customers were functioning only in domestic markets.

Methods and data analysis

The present study analyzes the data by using hierarchical regression analysis, and conducts the analysis in three phases. In the first phase, the control variable (supplier's size) was entered into the regression model. The second phase adds the independent variables (relational capital, relationship structures, and relationship specific investments) to the research model to analyze the direct effect of all the independent variables. In the third phase, the interaction terms (relationship structures * relational capital and relationship specific investments * relational capital) were entered to test whether relational capital moderates the relation between relationship structures, relationship specific investments and relationship development. In the fourth phase, we tested whether relationship development explains suppliers' profitability again controlled by supplier size.

Measures and questionnaire design

The measurement items that this study uses have either been developed based on those used in earlier studies or specifically for the purposes of this study. During the development process of this questionnaire, it was tested with three industry business unit managers, whom were asked to analyze and give development suggestions concerning the questionnaire structure and items.

Our constructs, that is relational capital, relationship structures, relationship specific investments were measured by a Likert-scale (1=fully disagree, 5=fully agree) items, while relationship development were measured by scale from 1 to 3 (1=fully disagree, 3=fully agree) and supplier's performance by return on investment. By the use of varying scale we intended to decrease the risk of common method variance caused by the common scale format (Podsakoff, MacKenzie & Lee, 2003).

In this section, we will introduce the items being applied. Items and their sources are reported in the table 1. To test the reliability and validity of our constructs, we decided to apply partial least squares (PLS) approach, as it particularly well fits to analysis of small datasets (Chin, 1998). Reliability and validity of all items is evaluated by Cronbach's alpha (Threshold value >.7), composite reliability (>.7), average variance extracted (>.5), and item loadings (>.6) (Chin, 1998; Fornell and Larcker, 1981; Nunnally, 1978). We also check the data for common method bias and multicollinearity.

The study measures relational capital with three items that reflect the theory of relational capital (Adler, 2001; Chang & Gotcher, 2007). Items measured trust, openness of interaction, and feeling of shared destiny. All items exceed the typical threshold values, since the Cronbach's alpha value is .82, the composite reliability value .90 and the average variance extracted .74. Also all the item loadings exceed .6, which can be considered satisfactory.

Relationship specific investments were measured with three items reflecting various types of investments, namely, investment into relationship specific tools and equipment, production competencies and information systems. This construct shows satisfactory composite reliability (.82) and AVE (.61) values as well as satisfactory item loadings (>.60), but a slightly low Cronbach's alpha value (.65). The low Cronbach's alpha value may result from the fact that we applied only three items, which try to capture different types of relationship

specific investments that do not necessarily correlate with each other. Given this plausible reason for the low alpha value, and since the composite reliability, AVE values and item loadings exceed the typical requirements, we have concluded that the construct and measures are usable in the analysis.

Relationship structures were measured with five items that include areas such as the supplier's relationship management structures (such as account management), shared relationship steering groups, joint development teams, integrated IT-systems and shared relationship process descriptions. Items were developed on the needs of this study, as we in our literature research and review found no tested scales appropriate and applicable. However, we can safely rely for the items being used as the analysis resulted in satisfactory Cronbach's alpha (.83), composite reliability (.87) and AVE (.59) values and satisfactory item loadings (.64 - .90).

To measure relationship development, the study uses four items measuring productivity development, quality development, development of delivery accuracy and development of efficiency in the use of capital in a particular customer-relationship. The items result in a satisfactory composite reliability value (.79) and item loadings (.66 - .75), but slightly low Cronbach's alpha (.65) and AVE value (.49). The recommended level for AVE is .5 (Fornell and Larcker, 1981), and the resulting value (.49) is only slightly below the threshold, which means that the items explain a little less of the variance of the construct than its error does. In addition, the alpha value is a little low, which may result from the fact that relationship development was measured by different dimensions of relationship development that do not correlate. As the loadings of each item were above .6 and showed both convergent and discriminant validity, and as the composite reliability values were well above the recommended threshold, we can safely conclude that the construct is usable in the analysis, even if it needs development in future studies (Chin, 1998).

Supplier profitability was measured by the average rate of return on investment within the time-period 2004-2007. Return on investment has often been applied as a general measure of company profitability (Anderson and Paine, 1978). We decided to apply an objective measure instead of subjective, since objective measures are more fine-grained (Chandler and Hanks, 1993).
We also checked the data in case of convergent and discriminant validity. Convergent validity is tested by analyzing whether each items' estimated loading on its posited construct is significant (Anderson & Gerbing 1988), which is the case in this study (Table 1). In addition, the fact that almost all the AVE-values are above .5 indicates satisfactory discriminant validity (Chin, 1998). Additionally, since the AVE–values exceed the squared correlations between constructs, we can conclude that the constructs show satisfactory discriminant validity.

The data were also checked for common method bias. We applied Harman's (1976) one factor test to assess whether the items load on multiple factors in an explorative factor analysis. We conducted the factor analysis by using the unrotated factor solution of principal axis factoring. The test showed that common method variance was not present in the data as items loaded on 5 factors (eigenvalue > 1, KMO = 0.71) and the first factor accounted for only 25% of the variance (Podsakoff & Organ 1986).

Table 1. Means, standard deviations (SD), Cronbach alpha values (CA), composite reliability values (CR), average variance extracted (AVE) and loadings.

Constructs and items	Mean	SD	Loadings
Supplier's company size			
Number of personnel in the supplier company	63.64	64.07	1.00
Relational capital (CA: .82; CR: .90; AVE: .74)	3.92	.50	
How would you describe the nature of inter-personal relationships in the most important customer relationships of your company…			
…in terms of trust	3.99	.53	.84***
…in terms of openness of interaction, constructive criticism and problem solving abilities	3.88	.55	.89***
…in terms of having a feeling of shared destiny and shared goals, togetherness, and a common understanding of best practice	3.86	.67	.86***

Relationship structures (CA: .83; CR: .87; AVE: .59)	1.89	.422	
What kind of structural bonds have you developed between your company and this particular customer?			
Our company has organized this relationship by naming a key account manager, starting a production line, which services this particular customer, or making some other arrangement that serves this customer relationship.	2.28	.532	.68***
In this particular customer relationship, we have a steering group including key personnel from both of the companies. This group holds regular meetings.	1.80	.556	.80***
In this particular customer relationship, we use development teams, which include experts from both sides of the relationship.	1.85	.484	.68***
In this particular customer relationship IT-systems are well integrated, which makes it possible to share various ordering, scheduling or technical information between the companies.	1.74	.590	.76***
In this particular customer relationship, the order-delivery process has been prescribed jointly, which helps us to steer and develop activities to avoid sub-optimization.	1.78	.580	.87***
Relationship specific investments (CA: .68; CR: .82; AVE: .61)	2.91	.68	
To what extent has your company made relationship specific investments…			
…in tools and equipment	3.12	.88	.78***
…in production competencies	3.23	.85	.90***
…in information systems	2.38	.90	.64***
Relationship development (CA: .65; CR: .79; AVE: .49)	3.74	.49	
How would you describe the performance of the most important customer relationships over the 3 most recent years...			
…in terms of productivity development	3.70	.69	.75***
…in terms of quality development	3.95	.61	.67***
…in terms of development of order-delivery accuracy	3.81	.83	.66***
…in terms of development of efficiency in the use of capital	3.50	.67	.69***
Supplier's profitability			
Average percentage return on investment in between 2004 and 2007 (ROI%)	17.39	13.87	1.00

***$p \leq 0.001$ **$p \leq 0.01$ *$p \leq 0.05$ † $p \leq 0.1$ (one-sided test)

DATA ANALYSIS AND RESULTS

Table 2 presents the squared latent variable correlations between all the variables in this study. We tested the data for possible multicollinearity. However, since the highest correlation between the independent variables is .36 (threshold <.9) and the vif-index, that is often used to test multicollinearity, is well below 2 (the threshold value is 10) for all the independent variables (Tabachnick & Fidell 2007), we conclude that multicollinearity is not present in the data.

Table 2. Squared latent variable correlations (off-diagonal elements).

	1	2	3	4	5	6	7
1. Supplier's company size	1						
2. Relational capital	-.05	1					
3. Structural capital	.25*	.30**	1				

8

4. Relationship specific investments	.16	.36**	.17	1		
5. Structural capital * relational capital	-.11	-.21	-21	-.10	1	
6. Relationship specific investments * relational capital	-.14	-.12	-.11	-.12	.15	1
7. Relationship development	.01	.50**	.11	.35**	.06	-.01	1
8. Supplier's profitability	.10	.15	.09	.20	-.06	.04	.32**

**. Correlation is significant at the 0.01 level; * 0.05 level (2-tailed)

In the second phase of analysis, we applied ordinary least squares regression analysis to study the research model and hypotheses. Table 3 displays the regression coefficients and associated t-statistics for all the independent variables.

Table 3. Results of the regression analysis.

Variable	Relationship development Model 1 β	Relationship development Model 2 β	Relationship development Model 3 β	Supplier's profitability Model 4 β
Constant	14.94	14.94	14.78	
Supplier's company size	.01	.01	.03	.10
Relational capital		.44***	.47***	
Structural capital		-.06	-.03	
Relationship specific investments		.21†	.21*	
Structural capital * relational capital			.17†	
Relationship specific investments * relational capital			.05	
Relationship development				.32**
F-Statistics	.00	7.85***	5.85***	4.93**
R^2	.00	.28	.31	.11
Change in R^2	.00	.28	.03	.11
Adjusted R^2	-.01	.25	.26	.09

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

The first model tests the effects of the control variable. According to the results, it seems that a supplier's company size has no statistically significant impact on learning ($\beta = .01$, t = 0.64, n.s.).

The second model adds all the independent variables — relational capital, structural capital and relationship specific investments. The results show that relational capital impacts positively and statistically significantly on learning in the relationship ($\beta = .44$, t = 4.10, $p < 0.001$). In contrast, the impact of relationship structures is non-significant ($\beta = -.06$, t = -.536, n.s.), while relationship specific investments have an impact on relationship development ($\beta = .21$, t = 1.97, $p < 0.10$). These variables explain 28% of the variance of learning. The model shows support for hypothesis 1a and a slight support for hypothesis 1c, while we found no support for hypothesis 1b.

Model 3 tests the effects of the interaction terms on learning. The interaction terms add 3% of the explanatory power of the independent variables. The model shows that while the impact of the interaction term between relationship specific investments and relational capital, is non-significant ($\beta = .05$, t = .47, n.s.) the effect of the second interaction term, in which relational capital moderates the relationship between relationship structures and relationship development, is significant ($\beta = .17$, t = 1.68, $p < 0.10$). The results show no support for hypothesis 2b, but some support for hypothesis 2a. However, according to Brambor, Clark and Golder (2005),

the interpretation of the interaction effect should finally be based on the model that shows the interaction effect and not on its statistical significance. Thus, the result of the statistically significant interaction model is plotted in figure 2. This procedure follows the guidelines of Aiken and West (1991) and aids the interpretation of the moderator test results.

Figure 2. Interaction plots for the moderating influence of the relational capital on the relationship between structural capital and relationship learning plotted at ±1 standard deviation from the mean of the moderator.
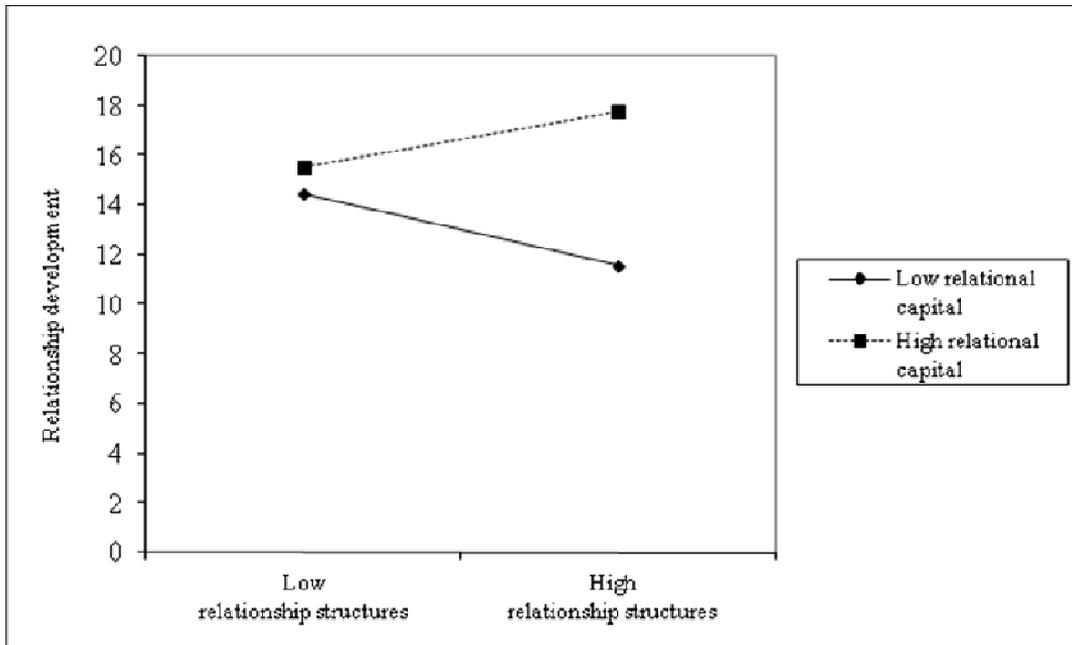
The interaction model shows how relational capital facilitates the relationship between relationship structures and relationship development. The model confirms that relationship structures facilitate learning and development only when relational capital is present. Without relational capital, the effect of relationship structures on relationship development is negative, in other words, the more bureaucratic the relationship is, the less the relationship develops. Thus it shows that relational capital transforms the structures so that they become enabling and furthermore that the enabling relationship structures facilitate learning and relationship development. Thus, these results support hypothesis H2a.

In model 5, we test the impact of relationship learning on suppliers' profitability. The explanatory power of these variables to supplier's profitability is 11%. Again, we applied supplier's company size as a control variable. The results of the model show that learning affects suppliers' performance statistically significantly ($\beta = .32$, $t = 3.01$, $p < 0.01$), while the control variable has no significant effect ($\beta = .10$, $t = 0.89$, n.s.). The result shows that relationship development has a positive impact on suppliers' profitability and thus shows support for hypothesis 3.

DISCUSSION AND IMPLICATIONS

The results of this study show that supplier's customer relationship integration in the form of relational capital, relationship structures and relationship specific investments is important in terms of relationship development. The results of this empirical study show that both relational capital and relationship specific investments directly affect relationship development. Furthermore, the results confirm that relational capital facilitates the relation of relationship structures and relationship development. Moreover, the results show that development of supplier's most important customer relationships increase supplier's profitability.

The fact that relational capital explains relationship development may result from the positive impact that trust and interaction has on information sharing and on learning. These results support prior studies that emphasize the significance of trust for relationship learning, since trust according to these results facilitate development of the relationship (Adler, 2001; Claro et al. 2003; Knight, 2002).

According to our results, relationship specific investments also seem to foster learning and development in the relationship. Results show that strengthening the supplier's resource-base has a positive impact on learning, and that suppliers' relationship specific investments foster relationship development. Prior studies, for example Liker and Choi (2004) suggest that relationship learning requires investments, and, applying case-based data, Sako (2004; See also Dyer and Hatch, 2004) reaches similar conclusions. The results of the present study support those suggestions and case-based evidence from prior research.

While in this study, relationship structures did not have a direct effect on relationship development, the moderation model showed that relational capital facilitates the link between relationship structures and relationship development so that the effect of relationship structures on learning becomes evident. It seems that relational capital enriches the interaction within the relationship while structures create the forum for interaction (Adler, 2001). Thus, relational capital supports interaction within the hierarchical structures by creating a relationship structure, which Adler and Borys (1996) termed enabling bureaucracy. Actually, some prior studies have found a positive correlation between formalization of structures and innovativeness, especially when formal structures support the capture of experience and lessons learned (Aulakh & Kotabe 1997). Thus, these results show that relationship structures should support explication, sharing and utilization of knowledge in order to support the development of relationship processes. In the light of the results of this study, it seems that relational capital may have a role to play in giving an enabling form to the coercive and bureaucratic structures, which support relationship learning and development through interaction and knowledge sharing.

One of the important contributions of this study lies in the discussion of the benefits of the network form of an organization. In light of the results of this study, relationship development seems to have a positive impact on small suppliers' profitability. These results lend support to the field of network research suggesting that while cooperation facilitates relationship development, relationship development ultimately increases the suppliers' profitability. Thus, the results of this study suggest that customer relationship integration does pay off for suppliers in the form of increased financial profit while the prior studies have shown the importance of supply chain integration for the performance of large industrial customers (Van der Vaart & Van Donk, 2008).

The results of this study suggest that suppliers should develop deeply integrated customer-relationships. Results are encouraging in the sense that they show also small suppliers benefiting from investments in customer relationship development and that it is not only the large customers that benefit from the development conducted in asymmetric supplier-customer relationships. The results inevitably suggest that development of in-debt social relationships is critical, as are relationship specific investments and relationship structures. Thus, suppliers should invest in development of strong social relationships, but also in relationship specific resources as well as relationship structures that facilitate relationship development.

In spite of the importance of the results of this study, we also need to consider its limitations. Even though this study has longitudinal design elements in terms of measuring suppliers' performance, a longitudinal design could have been applied also when measuring the other constructs. Also, the measurement of supplier performance could have been timed differently. Because the data concerning the independent variables were collected in 2006, ideally, each supplier's performance should have been measured after 2006. However, as we stated in the section on methodology, we decided to apply an average between years 2004-2007 since we considered that as a more reliable predictor supplier's profitability than one applying shorter timeframe. Finally, as in the present study we applied a rather small sample from Finnish subcontractors, further research from other industries as well as cultural contexts would be beneficial. Even if the present study has some limitations, we believe that the results provide an interesting foundation for further research and debate on partnerships between small suppliers and large industrial customers.

REFERENCES

Adler, P. S. (2001), "Market, hierarchy, and trust: The knowledge economy and the future of capitalism", Organization Science, Vol 1 No 2, pp. 215-234.

Adler, P. S. and Borys, B. (1996), "Two types of bureaucracy: Enabling and Coercive", Administrative Science Quarterly, Vol 41 No 1, pp. 61-89.

Alvarez, S. A. and Barney, J. B. (2001), "How entrepreneurial firms can benefit from alliances with large partners", Academy of Management Executive, Vol 15 No 1, pp. 139-148.

Anderson, C. R., and Paine, F. T. (1978), "Pims: A reexamination", The Academy of Management Review, Vol 3 No 3, pp. 602-612.

Armstrong, J. S., and Overton, T. S. (1977), "Estimating nonresponse bias in mail surveys", Journal of Marketing, Vol 14 No 3, 396-402.

Barney, J. (1991), "Firm resources and sustained competitive advantage", Journal of Management, Vol 17 No 1, pp. 99-120.

Barringer, B. R. (1997), "The effects of relational channel exchange on the small firm a conceptual framework", Journal of Small Business Management, Vol 35 No 2, pp. 65-79.

Bensaou, M. (1999), "Portfolios of buyer–supplier relationships", Sloan Management Review. Vol 40 No 4, pp. 35-44.

Bensaou, M. and N. Venkatraman (1999), "Configurations of interorganizational relationships: A comparison between U.S. and Japanese automakers", Management Science, Vol 41 No 9, pp. 1471-1492.

Bradach, J. L. and R. G. Eccles (1989), "Markets versus hierarchies: From ideal types to plural forms", Annual Review of Sociology, Vol 15, pp. 97-118.

Cai, S., Yang, Z. and Hu, Z. (2008), "Exploring the governance mechanisms of quasi-integration in buyer-supplier relationships", Journal of Business Research, in press.

Chang, K-H. and Gotcher, D. F. (2007), "Safeguarding investments and creation of transaction value in asymmetric international subcontracting relationships: the role of relationship learning and relational capital", Journal of World Business, Vol 42, pp. 477-488.

Chin, W.W. (1998), "The Partial Least Squares Approach to Structural Equation Modeling", in G.A. Marcoulides (Ed.), Modern Methods for Business Research, Lawrence Erlbaum, Mahwah, pp. 295-336.

Claro, D. P., Hagelaar, G. and Omta, O. (2003), "The determinants of relational governance and performance: how to manage business relationships?" Industrial Marketing Management, Vol 32, No 8, pp. 703-716.

Dyer, J. H. and Chu, W. (2003), "The role of trustworthiness in reducing transaction costs and improving performance: empirical evidence from the United States, Japan and Korea", Organization Science, Vol 14 No 1, pp. 57-68.

Dyer, J. H. and Hatch, N. W. (2004), "Using supplier networks to learn faster", Sloan Management Review, Vol 45 No 3, pp. 57-63.

Dyer, J. F. and Nobeoka, K. (2000), "Creating and managing a high-performance knowledge-sharing network: The Toyota case", Strategic Management Journal, Vol 21 No 3, pp. 345-367.

Dyer, J. H. and Singh, H. (1998), "The relational view: Cooperative strategy and sources of interorganizational competitive advantage", Academy of Management Review, Vol 23, No 4, pp. 660-679.

Forrest, J. E. (1997), "Strategic alliances and the small technology-based firm", Journal of Small Business Management, Vol 28 No 3, pp. 37-45.

Frohlich, M. T. and Westbrook, R. (2001), "Arcs of integration: an international study of supply chain strategies", Journal of Operations Management, Vol 19, No 2, pp. 185-200.

Gomes-Casseres, B. (1997), "Alliance strategies of small firms", Small Business Economics, Vol 9 No 1, pp. 33-44.

Huber, G. P., and Power, D. J. (1985), "Retrospective Reports of Strategic-Level Managers: Guidelines for Increasing Their Accuracy", Strategic Management Journal, VOl 6 No 2, pp. 171-180.

Håkansson, H., Havila, V. and Pedersen, A–C. (1999), "Learning in Networks", Industrial Marketing Management, Vol 28 No 5, pp. 443-452.

Joshi, A. W., and Stump, R. L. (1999), "The contingent effect of specific asset investments on joint action in manufacturer–supplier relationships: An empirical test of the moderating role of reciprocal asset investments, uncertainty, and trust", Journal of Academy of Marketing Science, Vol 27 No 3, 291-305.

Kale, P., Singh, H. and Perlmutter, H. (2000), "Learning and protection of proprietary assets in strategic alliances: building relational capital", Strategic Management Journal, Vol 21, No 3, pp. 217-237.

Kalwani, M.U. and Narayandas, N. (1995), "Long-term manufacturer-Supplier Relationships: Do They Pay Off for Supplier Firms?" Journal of marketing Vol 59 No 1, pp. 1-16.

Kulp, S.C., Lee, H.L. and Ofek, E. (2004), "Manufacturer benefits from information integration with retail customers", Management Science, Vol 50 No 4, pp. 431-444.

Kohtamäki, M., Vesalainen, J., Varamäki, E. and Vuorinen, T. (2006), "The governance of a strategic network: supplier actors' experiences in the governance by the customer", Management Decision, Vol 44 No 8, pp. 1031-1051.

Kothandraman, P. and Wilson, D. T. (2000), "Implementing relationship strategy", Industrial Marketing Management, Vol 29, pp. 339-349.

Larson, A. (1991), "Partner networks: Leveraging external ties to improve entrepreneurial performance", Journal of Business Venturing, Vol 6, No 3, pp. 173-188.

Larson, R., Bengtsson, L., Henriksson, K. and Sparks, J. (1998), "The interorganizational learning dilemma: Collective knowledge development in strategic alliances", Organization Science, Vol 9 No 3, pp. 285-305.

MaCaulay, S. (1963), "Non–contractual relations in business: A preliminary study", American Sociological Review, Vol 28 No 1, pp. 55-67.

Meyer, G. D., Alvarez, A. S. and Blasick, J. (1997), "Benefits of technology-based alliances: An entrepreneurial perspective", Frontiers of Entrepreneurship Research, Vol 17.

Miles, G., S.B. Preece & Baetz, M. C. (1999), "Dangers of dependence: The impact of strategic alliance use by small technology-based firms", Journal of Small Business Management, Vol 37 No 2, pp. 20-29.

Narayandas, D. & Rangan, V. K. (2004), "Building and sustaining buyer-seller relationships in mature industrial markets", Journal of Marketing, Vol 68 No 3, pp. 63-77.

Nunnally, J. (1978), Psychometric Theory, McGraw-Hill, New York.

Ploetner, O. and Ehret, M. (2006), "From relationships to partnerships: new forms of cooperation between buyer and seller", Industrial Marketing Management, Vol 35, pp. 4-9.

Podsakoff, P. M., MacKenzie, S. B. & Lee, J-Y. (2003). "Common method biases in behavioral research", Journal of Applied Psychology, Vol 88 No 5, pp. 879-903.

Sako, M. (1992), Prices, Quality and trust, Cambridge University Press, Cambridge.

Sako, M. (2004), "Supplier development at Honda, Nissan and Toyota: Comparative case studies of organizational capability enhancement", Industrial and Corporate Change, Vol 13 No 2, pp. 281-308.

Selnes, F. and Sallis, J. (2003), "Promoting Relationship Learning", Journal of Marketing, Vol 67 No 3, pp. 80-95.

Subramani, M. (2004), "How do suppliers benefit from information technology use in supply chain relationships", MIS Quarterly, Vol 28 No 1, pp. 45-73.

Tabachnick, B. G. & Fidell, L. S. (2007), Using Multivariate Statistics, Pearson, Boston.

Thorelli, H. B. (1986), "Networks between markets and hierarchies", Strategic Management Journal, Vol 7 No 1, pp. 37-51.

Tsai, W. and Ghoshal, S. (1998), "Social capital and value creation: the role of intrafirm networks", Academy of Management Journal, Vol 41 No 4, pp. 464-476.

Vickery, S. K., J. Jayaram, C. Droge and R. Calantone (2003), "The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships", Journal of operations management, Vol 21, pp. 523-539.

Walter, A., Ritter, T. and Gemünden, H. G. (2001), "Value creation in buyer-seller relationships: Theoretcal considerations and empirical results from a supplier's perspective", Industrial Marketing Management, Vol 30, pp. 365-377.

Werner, S., Praxedes, M., and Kim, H. G. (2009). "The reporting of nonresponse analyses in survey research", Organizational Research Methods, Vol 10 No 2, pp. 287-295.

Williamson, O. E. (1985), The Economic Institutions of Capitalism, The Free Press, New York.