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*Various supplier networks consist of many different types of interorganizational relationships. The coordination and evaluation of these kinds of networks is becoming more challenging as the importance and relative power of a single supplier increases due to the centralization of purchases. The main objective of this study is to measure mutual interorganizational trust in the supplier relations of Finnish paper industry. The second objective is to classify suppliers by the type of the relationship into different categories and to illustrate the development of these relationships in order to use these methods to assist main contractor's supplier coordination.*

*The case network consists of seven companies operating in the fields of maintenance, engineering and consulting. During the study, the representatives of both the suppliers and the customers were interviewed using a questionnaire made in advance based on earlier literature. The results of the study show that mutual interorganizational trust along with interdependence is a central factor when main contractors choose and coordinate their suppliers in the network economy.*

## 1. INTRODUCTION

Earlier studies concerning relationship, alliance and partnership formation have focused mainly on success factors, formation processes and rationales of interorganizational relationships (see e.g. Das & Teng, 2000; Hoffmann & Schlosser, 2001). However, the importance of identifying the characteristics of the relationship and classifying suppliers into different categories for the purpose of supplier coordination has been noticed (Cousins, 2002). Despite, there have been only a few studies concerning this research topic so far. This study tries to bridge the partial gap in the literature focusing on the supplier coordination and classification by the means of mutual trust and interdependence.

Networked organizations show often extensive dependence on interorganizational relationships. The challenge is to find ways to coordinate these relationships as many of them seem to fail as a consequence of opportunistic

behavior, difficulties in partnership coordination, and/or mismatching expectations (Park & Ungson, 2001). In most cases, the coordination leans mainly on structural arrangements like regulations and rules which are the heart of formal control (Das & Teng, 1998). These arrangements are usually expensive and their extensive use may damage the quality of the relationship by indicating a lack of belief in one's goodwill or competence (Dekker, 2004). However, trust has been found to substitute formal controls as it reduces goal conflict and increases the predictability of partner's behavior (Gulati, 1995). In addition, using trust to coordinate interorganizational relationship may make coordination less expensive and allow greater flexibility in changing conditions (Nooteboom, 1996). The underlying problem with trust is that if it is not already in place, it has to be built which tends to be very slow and long-lasting process (Johanson & Mattsson, 1987). This is why trust can be mainly used for coordinating long-term oriented relationships.

According to Sako (1992) we may distinguish three types of trust: contractual trust, competence trust, and goodwill trust. Contractual trust rests on an assumption that the other party will carry out its oral and written agreements. Competence trust concerns partner's ability to perform according to these agreements and goodwill trust focuses on partner's intentions to perform in accordance with those agreements. All these forms of trust are present in an interorganizational relationship to some extent and usually they develop further over time.

In order to use trust for coordination purposes organization has to recognize the amount of trust and characteristics of the relationship. The following model (Fig. 1) is suggested as a way to classify suppliers by the type of relationship and to assist the coordination of the supplier base. The model is based on the ideas of Wicks et al. (1999) and Cousins (2002) about matching trust and interdependence levels and classifying relationships into categories. The type of the relationship adopted depends on the level of output desired and the nature of the asset specificity (Cox, 1996). If the outputs of the relationship for example will be realized in long-term and they are strategically important along with high asset specificity, the relationship should be developed towards the area of strategic collaboration.

	High		
		Tactical Collaboration	Strategic Collaboration
<b>Level of trust</b>			Close Collaboration
	Low	Market-based Relationships	Opportunistic Behavior
		High	Low
		<b>The number of alternative suppliers</b>	

Figure 1 – Categories of the interorganizational relationships

In the model, the main means for deepening relationships are mutual trust building and reducing the number of alternative suppliers by transaction specific investments or centralizing purchases. Transaction specific investments lock both supplier and buyer into the transaction because the value of this capital in other uses is much smaller and without these investments alternative supplier can not produce the item as cost effectively as current supplier can (Williamson, 1979). Decreasing the number of suppliers leads to higher switching costs which increase the interdependence of the relationship. Hence, if the organization cannot match the level of trust to the number of alternative suppliers, the relationship may fall to the dangerous area of opportunistic behavior. In the area of opportunistic behavior relationships are focused mainly on short-term price reduction instead of medium to long-term competitive advantage creation or cost reduction (Cousins & Spekman, 2003).

Along with high switching costs the interdependence of a relationship can be created through valuable resources and monetary value of deliveries (Barney, 1991; Matikainen, 1998). The resource-based view suggests that interorganizational relationships are used to gain access to other firms' resources, for the purpose of garnering otherwise unavailable competitive advantage to the firm (Das & Teng, 2000). Achieving competitive advantage through interorganizational relationship creates tight resource-dependency between partners (Das & Teng, 2003). Monetary dependence between the buyer and the suppliers can be analyzed by measuring the value of the deliveries and the share of the deliveries in proportion to the supplier's turnover (Matikainen, 1998). If the value of deliveries is high along with the share of the deliveries in proportion to supplier's turnover partners are strongly tied together. As the interdependence between partners and uncertainty of the relationship increase the coordination of the relationship by formal controls becomes difficult and expensive due to the extensive monitoring (Das & Teng, 1998). Especially in this situation other coordination device is needed and the most suitable seems to be building of mutual trust.

The first step when building trust is to select conditions that are conducive to the emergence of trust (Nooteboom 1996). In the beginning of a new supplier relationship the supplier selection should be based on good reputation which enhances the competence trust (Barney & Hansen, 1994). During a relationship the main ability to increase the mutual level of competence trust is to consistently deliver high quality products in a timely accurate manner (Cooper & Slagmulder, 2004). As the trust to the competence of the supplier is high enough the relationship can be developed further by other interorganizational trust building methods (Sako, 1992). These are for example transaction specific investments, repeated interaction, information sharing, long-term commitment and mutually fair risk and benefit sharing mechanisms (Jarillo, 1988; Sako, 1992; Tomkins, 2001; Suh & Kwon, 2006).

## **2. RESEARCH DESIGN**

The empirical research was carried out as a multiple case study because it provided the opportunity to combine effectively qualitative and quantitative data from the customer-supplier relationships (see Eisenhardt, 1989). The study contains one

supplier network and two customers of the network in Finnish paper industry covering in total 12 dyadic interorganizational relationships. The supplier network consists of seven small and medium sized enterprises operating in the fields of maintenance, engineering and consulting. These suppliers are organized as an equal network where any of the firms can operate in the position of a main supplier if necessary. The customers are international companies, one pulp and paper producer and another focusing on paper machine production.

The data for evaluating the levels of trust in case-relationships was collected through structured interviews. The interviews consisted of eighteen quantitative questions which measured both the level of trust and the number of alternative suppliers. Some of the questions provided also further information to evaluate the reasons for possible reduction of the number of suppliers as they measured the mutual transaction specific investments of the relationship. Trust was measured by evaluating levels of certain characters of the relationships by 3 point scale similar to Sako's (1992) ACR-OCR scale. These characters were, for instance, openness between partners, risk sharing agreements, intense of supplier competition, the asset specificity of the relationship and projected length of trading. The more relationship had these characteristics conducive to the emergence of trust the higher was the evaluated level of mutual trust.

The representatives of the suppliers were interviewed first and on the basis of these interviews suitable customers for the research were selected. The selection was based on the size of the customer and the number of supplier relationships towards customer. Two suitable customers were found and personnel of these customers were interviewed using the same but slightly revised questionnaire.

### 3. EMPIRICAL RESULTS

Suppliers were classified into different categories based on the results of the conducted interviews (Fig. 2). The size of the supplier's figure indicates the dispersion of the answers. The wider the figure is the more there is differences in the evaluation of the number of alternative suppliers. The height of the figure reflects the dispersion of the calculated average levels of trust. In order to match trust and interdependence supplier should be situated on the diagonal of the figure or near of it (Fig. 2). In the case of Customer 1, the levels of interorganizational trust have increased properly as the number of alternative suppliers has decreased. Instead, Customer 2 has slightly failed to match trust and interdependence. Most of the suppliers are positioned below the diagonal and so they are quite near to the dangerous area of opportunistic behavior. Luckily, the monetary value of deliveries is relatively low so the possible opportunistic behavior of the suppliers is not very damaging to the Customer 2.

During last few years Customer 2 has forcefully centralized purchases which can be seen as a low number of alternative suppliers (Fig. 2). The centralization of the purchases has increased the switching costs of suppliers while the dependency of the suppliers has stayed low due to a relatively small share of the deliveries of Customer 2 compared with the suppliers' turnover. This has led to one-sided dependency which is characteristic to the opportunistic behavior (see e.g. Cousins, 2002). In the case of Customer 1 the delivery volumes has stayed continuously high. Hence, the

dependency has become mutual in most of the case relationships. Higher purchasing volumes than in the case of Customer 2 have also ensured the proper development of mutual trust in relation to the interdependency of the relationships.

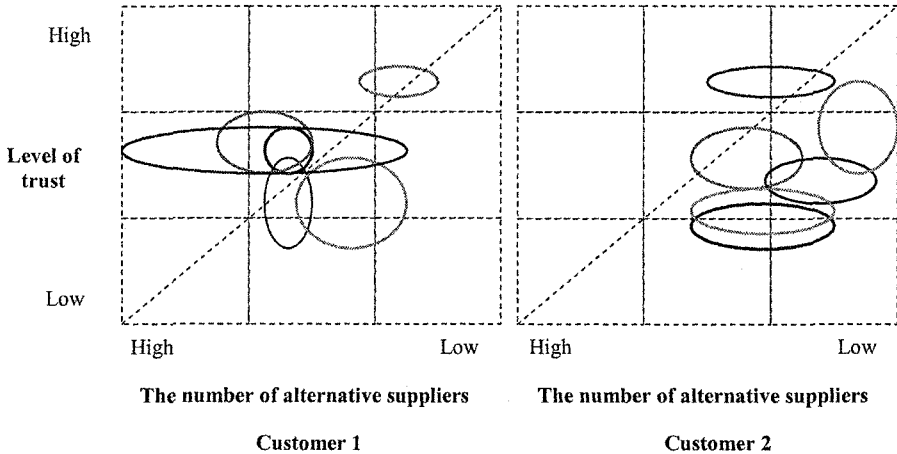


Figure 2 - Classification of the supplier relationships

Both valuable resources and transaction specific investments increase the supplier dependence of Customer 2 along with the one-sided monetary dependence. Customer 2 has outsourced nearly all maintenance and engineering know-how. Therefore Customer 2 needs the resources controlled by suppliers to maintain high production's utilization rate. In the cases of both customers the asset specificity arises mainly as a consequence of learning-by-doing and transfer of skills specific to a particular relationship. For example, the respondents of the both customers argued that it takes several years after a new supplier is as effective as the current suppliers are. Hence, the human asset specificity is high in both cases due to the transaction specific investments (see e.g. Joskow, 1985). This has also led to high switching costs which have especially locked Customer 2 to its suppliers because of the small supplier base. In the case of Customer 1 the dependency arises from the supplementary and complementary resource alignment in the relationships. The resources of the suppliers complete the resource base of Customer 1 creating valuable combinations which may enhance competitive advantage.

None of the case relationships has drifted fully to the area of opportunistic behavior. The main reason for this has probably been the supplier selection criteria. Both customers viewed that the most important factors affecting the supplier selection and the centralization of purchases are supplier's good reputation and valuable know-how along with competence trust. All the representatives of the customers said that in the long-run competent supplier is more cost effective than supplier offering low price products or services at the expense of quality. But they also stated that along with good quality competitive price is important. Therefore, suppliers having the best price-quality ratio probably get most of the purchases.

As the supplier relationships deepened, mutual trust was build up mainly by transaction specific investments, increased information exchange and long-term

commitment. Especially customers built up trust by sharing information about their predicted demand on the maintenance and engineering services and increasing the projected length of trading. Long-term commitment was realized through annual contracts with the suppliers. These annual contracts were related to minor service piecework of maintenance and engineering. Most of the transaction specific investments were made by the suppliers as a result of learning-by-doing and transfer of skills. Better know-how of the processes, machinery and working methods of the customer increased suppliers' effectiveness in a particular relationship. As a whole, the trust in nearly all of the relationships was enhanced mutually after a few years of joint interaction.

In the case of three supplier relationships the mutual trust was enhanced furthermore. Increased openness between these partners and additional transaction specific investments created conditions that were conducive to the addition of trust. In these cases customers had courage to give even strategically important information to the suppliers which increased notably the level of mutual trust. Once again most of the transaction specific investments were made by suppliers. All the three suppliers had employees who provided services full-time to these close customers. In addition, some of these employees worked physically in the office spaces of the customers. This transaction specific know-how deepened these relationships even more. Due to the high mutual trust and interdependence, two of these relationships ended up clearly to the area of strategic collaboration (Fig. 2).

#### 4. DISCUSSION

Based on the empirical findings of this case study and earlier literature a cyclical development model of an interorganizational relationship is proposed (Fig. 3). The proposed model consists of four phases which cause the gradual deepening of an interorganizational relationship. The phases formulate a circle and as the relationship deepens it can go through the circle several times. Central elements of the model are trust and mutual dependency which are also potential key factors within a successful partnership relationship (see e.g. Das & Teng, 2003). The development of the relationship begins when the customer recognizes that his/her resource base lacks valuable resources which can be combined effectively with the existing resources or when there is a need to have related supplementary resources. In the first phase, customer seeks reliable suppliers controlling valuable resources to the customer. So far, the interaction between customer and supplier has been minimal, the uncertainty of the relationship is high and dependency low. This is why supplier selection is based on supplier's good reputation and competence trust which enhance the overall interorganizational trust of the relationship. After the choice of the supplier the actual relationship begins. As the amount of purchases increases, transaction specific investments are made as a consequence of mutual adaptation and learning-by-doing (phase 2). This increases also the monetary dependence between the customer and the supplier.

The transaction specific investments affect many dimensions of the relationship. They increase the amount of trust and valuable resources along with reducing the number of alternative suppliers (see e.g. Peteraf, 1993) (phase 3). The last phase of the circle includes the growth of the interorganizational trust. The addition of mutual

trust is gained through increased information exchange and long-term commitment to the relationship. Finally the higher level of interorganizational trust increases the amount of valuable resources of the relationship as trust is a rare and imperfectly imitable resource due to its significant degree of social complexity (Barney & Hansen, 1994). As a result of this development the relationship has moved from the field of market-based relationships to the area of close collaboration (Fig.1).

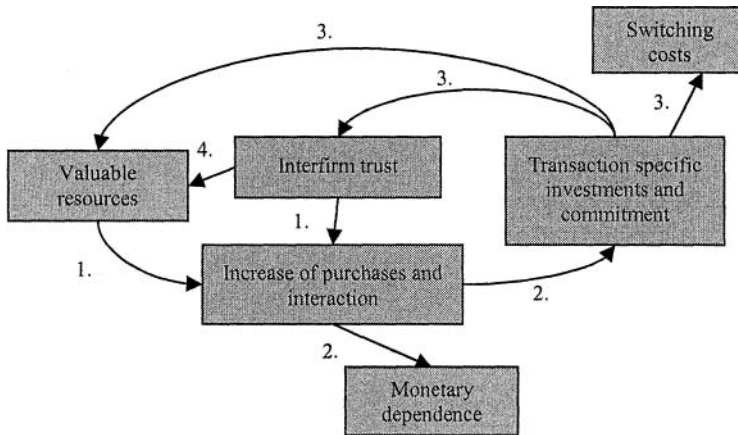


Figure 3 - Proposed cyclical development of an inter-organizational relationship

After the first development circle, the deepening of the relationship can continue as happened in three case supplier relationships. During the second development circle the additional transaction specific investments increased the human asset specificity of the relationships. Mutual trust was also developed further by the means of increasing the openness of the relationships. As a result of the second development circle two of these relationships deepened to the area of strategic collaboration.

The findings of the study can be summarized in two important aspects. A method of classifying interorganizational relationships was proposed to assist main contractor's supplier coordination mainly in the situations of supplier selection and centralization of purchases. Secondly, the classification was supported by the conceptual model for the purposes of deepening the supplier relationships. The major limitation of these findings is the extent of the study. The empirical part of the study covered only 12 dyadic inter-organizational relationships in Finnish paper industry. The results can not be generalized directly to other geographical areas. In addition, the empirical data was quite narrow and further research should be carried out before the proposed supplier classification and the development model can be used as a managerial tool. However, the observations can be a fertile basis for further research, for example statistical analysis on the proposed development model of inter-organizational relationships would be needed.

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