

BRINGING THE NETWORK INTO THE DYADIC RELATIONSHIP

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Abstract

This paper examines how business relationship partners bring the surrounding business network into their business relationship by coordinating activities across business relationships. It uses a conceptualization of business networks as unbounded structures of connected business relationships between business firms viewed as collective actors. The paper formulates a structural model in which relationship trust is an exogeneous construct and business network coordination and relationship commitment are endogeneous constructs. The LISREL analysis of the model supports the hypothesized model but shows that the role of the business network context of the relationship is more complex than initially hypothesized.

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Introduction

Reflecting developments in the market place, cooperative arrangements among firms have attracted the attention of many academics in the last decade (Contractor and Lorange, 1988; Baker, 1990; Axelsson and Easton, 1991; Larson, 1992; Nohria and Eccles, 1992; Alter and Hage, 1993; Powell, Koput and Smith-Doerr, 1996; Beamish and Killings, 1997). Although many of the studies focus on formal contractual arrangements, such as licensing, joint ventures, R&D partnerships, and subcontracting there is reason to consider also the less formalized cooperative relations that develop between supplier firms and customer firms in business markets (Johanson and Mattsson, 1987; Powell, 1990; Håkansson and Snehota, 1995). The literature on dyadic relationships between firms in business markets has become extensive and rich from both a conceptual and an empirical standpoint (Levinthal and Fichman, 1988; Anderson and Narus, 1990; Ford, 1990; Larson, 1992; Morgan and Hunt, 1994; Ring and Van de Ven, 1994; Zaheer and Venkatraman, 1995), and provides considerable insight into the dynamics of interfirm relationships.

A number of researchers have, however, suggested that such relationships do not develop in isolation, but are connected to one another and can fruitfully be studied within a context of connected network relations (Achrol, Reve and Stern, 1983; Thorelli, 1986; Larson, 1992; Anderson, Håkansson and Johanson, 1994). Similarly, Granovetter (1992) has stressed that it is important to avoid slipping into dyadic atomization, that is, viewing dyadic relationships as if they were isolated from other relationships. In a review of Burt (1992), Salancik (1995: 348) emphasizes that a “network theory should do either of two things: (1) It should propose how adding or subtracting a particular interaction in an organizational network

will change coordination among the actors; or (2) It should propose how a network structure enables and disables the interactions between two parties". Thus there seems to be a need for studies in which network constructs are used in the explanation of dyadic interaction. In this spirit, the objective of this paper is to bring business networks into the analysis of dyadic business relationships in business markets.

Previous studies have demonstrated the importance of trust in the development of interfirm relations (Larson, 1992; Ring and Van de Ven, 1992; Morgan and Hunt, 1994; Zaheer and Venkatraman, 1995). In this paper, we extend the role of trust by arguing that it is critical in coordinating activities across network relationships (cf. Granovetter, 1992; Uzzi, 1997). In the following sections, we define business networks and discuss a number of assumptions about business relationship development which are based on prior research of interfirm relationships. This leads to a simple structural model of business network coordination in dyadic business relationships with trust as an exogeneous construct and business network coordination and relationship commitment as endogeneous constructs. The empirical analysis of the model is performed by LISREL and utilizes a database established within the European International Marketing and Purchasing (IMP) project. Analysis of the model shows that, although our hypothesized model is supported, the role of business networks in relationship development is more complex than initially expected.

Business Networks Defined

Networks are multifarious and elusive phenomena that tend to be used as some kind of catch-all explanation much in the same way as power according to March (1966). In Powell's discussion of networks (1990: 295), as compared with markets and hierarchies, he stresses however, that the literature "shares a common focus on lateral and horizontal patterns of exchange, interdependent flows of resources, reciprocal lines of communication". This

demonstrates the attention he places on the nature of relations among actors when conceptualizing networks. In a related approach, and drawing on Emerson (1981) we define business networks as two or more connected exchange relationships between business firms that are conceptualized as collective actors. In the following we call those exchange relationships business relationships. The definition has its strength in that business networks are defined in terms of business relations in the same way as Emerson's (1981) exchange networks are defined in terms of exchange relations. The term "connected" is the critical link between relations and networks, meaning that exchange in one relation is contingent upon exchange in another. Business networks are, according to this definition, not aggregates of relations; the relations must be connected in order to form networks. Exchange in one relationship may be facilitated, hindered or otherwise affected by exchange in a connected business relationship. For instance, a firm's business relationships with two different exchange partners may support each other in several different ways. Thus, development of a critical supplier relationship may be conducive to exchange with a certain customer. A relationship with a competent customer may support development of exchange with other customers, or, inversely, a close relationship with one customer may hinder exchange with another, competing, customer. Relationships can be both directly and indirectly connected to each other. Since each firm may be engaged in several connected relationships business networks "extend without limits through connected relationships making any business network boundary arbitrary" (Anderson, Håkansson and Johanson, 1994: 4).

The above definition recognizes that business firms are embedded in unbounded network structures (cf. Granovetter, 1985; Grabher, 1993; Uzzi, 1997). This can be compared with concepts of network organization, usually focusing on membership and density in a bounded set of network units (Baker, 1992; Miles and Snow, 1992; Achrol, 1997). The

business network provides the context of the acting subject, the business firm, or of a set of business firms, i.e. a dyadic relationship.

When we say that business networks are unbound, we also say that many of the traditional network concepts, e.g., centrality and density, which are based on the assumption of a bound network, cannot be used fruitfully for our purpose. When we examine the role of business networks in business relationship development we must seek other network conceptualizations. In fact, one of the interesting features of business networks are that they may extend without limits. This is evident if we consider that important sources of competitiveness of firms are their development of relationships with suppliers and customers in other technologies or markets than those utilized by competitor firms. This implies that in an analysis of the ways in which firms utilize business networks it is not appropriate to apply external network criteria such as technology, industry or country. Any such network delimitation is a construction by the observer (Aldrich and Whetten, 1981) and from the point of the individual actor arbitrary. Instead, and following Snehota (1990), we assume that actors enact a focal relationship based on their involvement in a limited set of connected relationships which they consider relevant. We call this set the business network context of the focal relationship and assume that forces from more distant parts of the network structure are mediated by this context. This assumption provides a network concept that is directly compatible with the relationship concept employed.

Business Relationships - Some Assumptions

As the business relationship is the primary element in the definition of business network some basic assumptions of business relationships are required. Business relationships are defined as exchange relationships between two firms, conceptualized as collective actors, doing business with one another. A first assumption is that business relationships develop through social

exchange processes (cf. Homans, 1958; Thibaut and Kelley, 1959; Blau, 1964; Emerson, 1972) in which the relationship partners increase their interdependence and commitment to the relationship through interaction (Kelley and Thibaut, 1978; Dwyer, Schurr and Oh, 1987; Anderson and Narus, 1990; Fichman and Levinthal, 1991; Anderson and Weitz 1992). In the development process, trust is an important element that allows partners to rely on each other's willingness and ability to continue the exchange (Axelrod, 1984; Bradach and Eccles, 1989; Larson, 1992; Moorman, Desphandé and Zaltman, 1993; Ring and Van de Ven, 1992; Zaheer and Venkatraman, 1995; Johnson et al, 1997).

A second assumption is that, in dyadic business relationships, the two firms bring to the dyad efficiency and profitability criteria, needs and capabilities rooted in complex systems of interrelated products, production processes, logistics as well as administrative routines (Hallén, Johanson and Seyed-Mohamed, 1994; Levinthal and Myatt, 1994). An important aspect of interaction between the two firms is coordination of their systems (Alter and Hage 1993). Coordination entails extensive information exchange between the managers of the two firms. Empirical studies have shown that exchange between supplier and customer firms that are important to each other is not only a matter of buying and selling, but of coordinating interrelated activities and resources in manufacturing, quality, development, logistics, design, services and the like (Cunningham and Homse, 1982; Håkansson, 1982; Turnbull and Valla, 1986; Johnson et al, 1997). Through this, the relationship partners modify and adapt their operation systems to each other (Hallén, Johanson and Seyed-Mohamed, 1991). Although many of the coordination efforts involve discrete changes in organization, routines or equipment, many changes take place gradually as the partners learn through current interaction how to best utilize one another's capabilities. Both the discrete and the gradual changes imply a commitment to the relationship in order to raise the joint productivity of the relationship partners and thereby create additional value (Johnston and Lawrence, 1988;

Zajac and Olsen, 1993). Just-in-time systems (Frazier, Spekman and O'Neal, 1988), joint product development (von Hippel 1988), and total quality management (Westphal, Gulati and Shortell, 1997) are instances of highly coordinated activities between close relationship partners. Much coordination, however, concerns less visible routines of the firms (Nelson and Winter, 1982).

In this perspective, business relationship development is a process in which the relationship partners gradually, informally, and interactively increase the scope and intensity of their interfirm coordination by bringing additional activities and resources into it. This process can be expected to be positively affected by trust between the partners. The process is by no means deterministic. It proceeds only as long as the partners find it profitable, or otherwise worth while, to continue and develop the business with each other.

Empirical studies of business markets have demonstrated that firms in such markets establish and develop business relationships with a number of customer and supplier firms that are important with regard to business volume, technical development, market information etc. (Håkansson 1982; Turnbull and Valla 1986; Uzzi 1997).

Business Network Coordination in a Dyadic Business Relationship

Consider now a business firm engaged in a set of business relationships in which the firm coordinates its activities with those of each of the relationship partners! In each relationship the firm has two options - either to keep the relationship isolated from other relationships, or to increase the scope of coordination by coordinating activities in the relationship with those in another. Thus, a firm with an important customer relationship and an important supplier relationship may attempt to use the production process as a buffer between the two so that possible problems in one relationship will not have a direct impact on activities in the other. The argument here is that a relationship may be too delicate to risk problems in other relationships interfering with it and should therefore be protected from them. Or, the firm may seize the opportunity to increase productivity by coordinating activities not only within each of the two relationships, but also across them. Just-in-time deliveries, total quality management, and on-line ordering are examples of specific systems in which there are great potential gains from this kind of coordination effort across several relationships. Such coordination may entail relationships along the value chain, but it may also concern several supplier relationships or several customer relationships. Coordination across relationships requires modification, adaptation and calibration of activities so that the relationships support each other. As with within-relationship coordination, between-relationship coordination may concern discrete changes of operation systems or installation of specific equipment. But it may just as well be an outcome of continuous changes due to current efforts to raise productivity. In any case, coordination implies development of routines that connect the relationships to each other. Evidently, this also means an increased commitment to the relationships in the sense that it implies “a broadening and deepening of the exchange relation” (Anderson, Håkansson and Johanson, 1994: 10).

More generally, we define business network coordination as the extent to which activities in several relationships are coordinated with activities in a focal business relationship. Business network coordination means that the business network context of the dyad, comprising the relationships connected to it, is brought into the dyad through coordinating activities in the connected relationships with those in the dyad. In this way, both the dyad and the business network context become a shared affair of the two partners (Blankenburg Holm, Eriksson and Johanson, 1996). This process can be viewed as an element in the process of building relationship commitment described by Anderson and Weitz (1992).

In his seminal article on commitment, Becker (1960: 5) stresses the role of side bets in making commitments: “The committed person has acted in such a way as to involve other interests of his, originally extraneous to the action he is engaged in, directly in that action”. Translated to the present situation, through business network coordination in a focal relationship, the firms involve other interests, that is, other relationships, originally extraneous to the focal relationship. This is a side bet foreclosing alternative relationships. Consequently, there is reason to expect that business network coordination in a focal business relationship leads to increased commitment to that relationship.

Hypothesis 1: Business network coordination in a focal business relationship has a positive effect on relationship commitment.

By bringing the business network context into a focal relationship, the vulnerability of the firm increases. The business network context comes closer to the relationship and problems within it may involve direct, negative consequences for the connected relationships and *vice versa*. Problems in one of the connected relationships may also be mediated in the focal relationship and have a deleterious effect on one of the others. Thus, business network

coordination entails risks that are not associated with separate and isolated relationships. The willingness to be vulnerable, i.e. to trust, is antecedent to assuming the risk, i.e. to coordinate business networks with the relationship (Mayer, Davis and Schoorman, 1995). It can therefore be expected that trust in a dyadic business relationship is important if the partners are to bring the business network context into the dyad through coordination of business network activities with the relationship activities.

Hypothesis 2: Trust in a focal business relationship has a positive effect on business network coordination in the relationship.

Based on the two hypotheses, we form a simple, two-step structural model of business network coordination in a focal business relationship where relations 1-2 correspond to the above hypotheses.

Insert Figure 1 here

Method

The empirical analysis of the study is based on a database established in the European International Marketing and Purchasing (IMP) project. Data were gathered by personal interviews with managers of supplier firms in France, Germany and Sweden about business relations with their most important customer firms in France, Germany, Italy, Japan, Sweden, the UK and USA. Thus, the sample of 136 relationships investigated is international. The supplier firms belong to different industries ranging from raw materials to equipment.

Respondents are marketing executives who were asked to select one of the firm's most important customers in one of the seven indicated countries so that an even distribution of relationships across customer countries could be achieved. The sample investigated is fairly evenly distributed over the seven customer countries. The respondents were also asked to select a customer relationship they were responsible for and had personal experience of. Thus, the respondents selected play a key role in the firms' enactment of the relationships.

The data were processed using LISREL, a statistical technique and computer program that traces structural relations in a set of data (Hayduk, 1987; Anderson and Gerbing, 1988; Bollen, 1989; Jöreskog and Sörbom 1993). In order to trace structures, LISREL utilizes two independent sources of variation between variables. Firstly, estimated linear regression coefficients are used. Secondly, the technique uses covariances between the error residuals of the linear regression estimates. The true variation of variables is approximated better when both regression estimates and error term covariances are used (Lord and Novick 1968; Jöreskog and Sörbom 1993).

Structural models are formed by defining relations between latent variables, which are higher order variables that represent underlying commonalties of the observed variables. Groups of observed variables are indicators of a latent variable, which is often interpreted as a theoretical construct. The formation of constructs and models together with the error covariance and correlations make up the fundamental dimensions of LISREL. Table 2 shows how these dimensions can be put together. The formation of constructs and models may be described as causal dimensions, whereas the pattern of covariance in error terms and correlations may be described as a structural pattern in data.

Table 1. The basic dimensions of structural equations modelling with LISREL

The method for assessing validity stems from the basic dimensions used in modelling. We assess the validity of our structural model in three dimensions: a) nomological validity, meaning the validity of the entire model; b) convergent validity, meaning the homogeneity of constructs in the model; and c) discriminant validity, meaning the degree of separation between constructs. Estimates for assessing validity are derived from the structural model and a measurement model, which contains no structural relations. All three validity dimensions should be confirmed in both models. The key statistical estimates result from both error covariances and correlations, but their separate contribution can also be estimated.

The measures of nomological validity are χ^2 and degrees of freedom, which measure the distance between data and model, and an estimate of a non-significant distance, the p-value, which should be above 0.05 for significance at the 5% level (Jöreskog and Sörbom 1993: 111-131). Convergent validity is confirmed if indicators load only on their constructs. Convergent validity is judged by factor loadings, t-values and an R2 value, which measures the strength of the linearity in the relation (Jöreskog and Sörbom, 1993: 121). Discriminant validity is assessed from the measurement model. Correlations between latent variables should be significant, and not be unidimensional. Significance is investigated by the t-values of correlations. Testing of unidimensionality is done by forming an approximate confidence interval from error terms and correlation coefficients. An interval including 1 suggests unidimensionality, and thus rejects discriminant validity (Jöreskog and Sörbom, 1993: 117).

Interpretation of a valid model should be done with the awareness that each relation in the model is a part of the broader context of the model itself. There are many

counteracting and reinforcing structural effects within a model. It is therefore essential to view one part of the model in light of it being contextual to the model. A simple example is a causal chain where the construct a causes b causes c . In such a model, a has an effect on b , and b has an effect on c , but a has also an indirect effect on c that is mediated by b . The effect of b on c is thus the total effect of the direct effect of b on c and the indirect effect of a on c . The correct interpretation of this simple example is that b has an effect on c , in the context of b being affected by a . Patterns of causal effects are often very complex, which is the reason that it is recommended that the researcher be as parsimonious as possible in structural modelling (Bollen 1989). Another implication is that validity cannot be assessed piece by piece. It is not correct to investigate the causal effect from a to b in one model, and then b to c in another, in order to conclude that a has an effect on c . All constructs and relations have to be assessed in one and the same model.

The total number of missing values in the data is 27, of which 11 are on the SPL indicator (see Table 2). A likely explanation for this is that there are cases when there are no suppliers of products supplementary to the focal supplier's. The remaining missing values are distributed evenly among the cases and indicators. We have used pairwise deletion in the computations, though more or less similar results were found using listwise deletion (sample size 114).

Construct validity

In the literature, we find a great number of conceptualizations of trust and opportunism, often presenting them as opposites. Sako (1996) finds that they are not opposite, even though they are closely related. This finding also corresponds closely with Granovetter's (1992) discussion of trust and malfeasance. We expect that, while trust has an initiating and driving role in relationship development, customer opportunism

will have an inhibiting role in the process. Further explication of the distinction between the two constructs can be made in relation to the assumption of opportunism which is central in transaction cost economics (Williamson, 1985). It is assumed that the counterpart in a transaction may act opportunistically, and that it is not possible to distinguish in advance between those who will act opportunistically and those who will not (Ghoshal and Moran, 1996). Therefore, governance forms that mitigate opportunism will be used. Correspondingly, though in reverse, in a social exchange perspective in which gradual relationship development is expected, the trust construct corresponds to the assumption that one's partner is reliable, while opportunism is based on the experience that the exchange partner may not be completely reliable.

A simple definition that seems to subsume most of the conceptualizations of trust is a willingness to rely on an exchange partner (cf. Mayer, Davis and Schoorman, 1995; Moorman, Desphandé and Zaltman, 1993). Trust, in this respect concerns the attributes of the trustee, the exchange partner, as experienced by the trustor. This definition concerns the willingness to rely on an exchange partner, which may be considered an attribute of the trustor. This aspect of trust can be expected to be relevant in initiating and driving the social exchange process in the relationship. There are two indicators of this aspect of trust. The first is related to a general feeling of trust in the partner. The second indicator is more specific and refers to information, but, like the first, also measures an attitude of the trustor.

Opportunism is defined by Williamson (1985) as self-interest seeking with guile. Opportunism, in this respect, is more related to the responses in the course of the social exchange process (Blau, 1964; Zucker, 1986; McAllister, 1995; Sako and Helper, 1996). The two indicators on opportunism are meant to capture the trustee's reliability as experienced by the trustor. The first concerns the supplier's perception that the

customer is trying to exploit the outcome of relationship cooperation for his own gain. The second concerns the supplier's feeling that the customer is concealing important information from the supplier. Thus, our construct analysis supports Sako's (1996) finding that opportunism is not only the opposite of trust. Nevertheless, it is closely related to trust, albeit with the opposite sign.

The construct analysis demonstrates that the four indicator variables on trust and opportunism are not indicators of one common construct, but of two valid, separate and interrelated constructs. This is shown by the loadings, t-values and R2 values in Table 2.

Insert Table 2 here

We define business network coordination as the degree to which business in a focal relationship is coordinated with business in connected relationships. This is captured by the business network connection construct which represents connected relationships that are important to activities in the focal relationship. We have identified to what extent business in the focal relationship may be affected by, on the one hand, any of the supplier's relationships with his own suppliers or other customers, and, on the other, any of the customer's customer relationships or relationships with suppliers of supplementary products (Figure 2). The respondents were asked to identify one relationship of each of the four kinds and indicate how strongly it was connected to the focal relationship.

The business network connection construct has high factor loadings and t-values, but two of the R2 values are somewhat low. The estimates show that the connections with the supplier's suppliers and with the customer's customers have the highest validity, and

that the other connections are almost acceptably valid. In cases where the business network connection construct has been applied to other contexts, the validities of the connections have been different (Blankenburg Holm, Eriksson and Johanson, 1996). The construct seems to display different faces in different settings, which is why we consider it important to keep all the four indicators in the construct.

The business network connection construct is based on relationships connected to the two business partners. A separate test shows that it is not possible to distinguish between the supplier's and the customer's network connections. Thus, the business network connection construct concerns connected relationships on both sides, indicating that business network coordination is a shared affair involving both relationship partners.

Relationship commitment is defined as the binding of the firm to continued exchange with the partner firm (Kiesler, 1971; Fichman and Levinthal, 1991). One of the two indicators is based on a question designed to elicit whether the supplier considers that exchange in the relationship with the customer is part of a wider relationship with this customer. The existence of something more signifies a commitment to development of the relationship beyond the present exchange. Such development inevitably includes work efforts and resource commitment. The second indicator is based on a question that asks whether the supplier perceives that the customer is prepared to invest time and money in developing the relationship. Such an indicator concerns the willingness to commit resources to developing the relationship. The indicators are valid for the construct, since loadings, t-values, and R2 values are all good.

So far, all indicators are valid indicators of their constructs. The next step is to examine the measurement model for discriminant validity. The measurement model contains the same two modifications (ϕ 's) that were added to the structural model (see Figure 2 below). With these modifications, the model's χ^2 is 46.80, with 33 degrees of freedom, at a probability

of 0.06. The measurement model shows that all constructs are valid, but one correlation, between customer opportunism and relationship commitment is not significant. This means that we cannot estimate the probability of these constructs not being unidimensional. However, on conceptual grounds we have reason to consider them discriminantly valid.

It is worth observing that the analysis of discriminant validity clearly demonstrates that the two trust constructs are two separate, although highly correlated (-0.63, with t-value -6.90), constructs.

Structural model analysis

The empirical application of our hypothesized causal structure, comprising both trust and customer opportunism as parallel exogenous constructs, is displayed in Figure 3 below. The structural model's key statistical measures are good, since the χ^2 is 47.46 with 36 degrees of freedom, at a probability of 0.10. The t-values of all relations in the model are over 2.20. The R2 values of two of the business network connection indicators are 0.17 and 0.13, but all other R2 values are above 0.20. In all, the key statistics of the model suggest that the model is valid, which means that the model is a good representation of the respondents' perceptions of reality.

Figure 2 in here. The structural model.

The resulting structural model provides strong support for the hypothesized relations.

As can be seen in Figure 3, relationship commitment is increased as a result of business network connection with the focal relationship (0.33), thus supporting Hypothesis 1. The results also show that business network connection is increased as a consequence of trust in the relationship (0.70), which supports Hypothesis 2.

Interestingly, however, there is an unexpected positive, and equally strong, effect from customer opportunism to business network connection. This effect is odd, especially since it leads to in both cases indirect effects on relationship commitment (0.23) with a t-value of 2.12. Our interpretation is that the business network connection construct not only represents business network coordination but also efforts to mobilize the business network context in order to constrain opportunistic behavior. We label such efforts “business network control”. We can say that business network coordination corresponds to outcome interdependence in that the outcomes in one relationship are interdependent with outcome in connected relationships (Pfeffer and Salancik, 1978). Business network control corresponds better to behavior interdependence in that behavior in one relationship is interdependent on behavior in connected relationships. Our analysis concerns ongoing relationships in which trusting partners coordinate, to some extent, interdependent activities across connected relationships. When, however, one of the partners experiences a tendency on the part of the other to act opportunistically, the former tries to mitigate opportunistic behavior by increasing interaction within the business network context. The former can also be expected to avoid additional commitment to doing business with the opportunist.

In order to test this, we should ideally separate business network connection into two constructs: business network coordination and business network control, and use indicator variables that more precisely capture the two constructs as well as separate antecedents and consequences. Our data does not allow such an analysis. We can, however, shed some light on this issue by analyzing and comparing two structural models which differ only in that one

allows a direct relation from trust to relationship commitment and the other a direct relation from customer opportunism to relationship commitment. We expect that trust has a direct, positive effect on relationship commitment and, consistent with our interpretation above, that customer opportunism has a direct, negative effect on relationship commitment.

Figure 3 in here

Model A shows the same causal structure as in Figure 2 above, the only difference being an added causal effect from trust to relationship commitment. There is, as expected, a positive relation (0.33) with a t-value of 2.61. The total effects to the right of Model A show that trust has a strong effect (0.56) on relationship commitment (t-value 3.37), whereas the effect of opportunism on relationship commitment is insignificant (t-value 1.89). This result shows that when trust is related to relationship commitment, both directly and through business network connection, it has such a strong impact on the within and the between relationship exchanges that customer opportunism loses its effect.

Model B in Figure 3 is the same as in Figure 2, with a causal effect from customer opportunism to relationship commitment added. The total effects to the right show that trust has a strong positive effect on relationship commitment (0.42, t-value 2.48), whereas the effect of opportunism on relationship commitment is not significant (0.09 with t-value 0.56). The explanation for this is that opportunism has an indirect, positive effect through business network connection, as above (0.42, t-value 2.48), and a strong negative effect on relationship commitment (-0.34, t-value -2.39). This means that opportunism reduces the commitment to a relationship at the same time as it strengthens business network connection, which we interpret as business network control, and thereby also relationship commitment.

Business network connection provides a means of controlling customer opportunism. As such, control is not effortless, it therefore results indirectly in relationship commitment. Together the two effects counteract each other, but separately they present insight into how customer opportunism is constrained by business network connection.

Comparing models A and B further, we find that the direct effect of business network connection is much stronger in Model B (0.55) than in Model A (0.33). This is probably due to the negative effect of opportunism on commitment having been singled out of the positive effect that opportunism has on commitment in the context of business network connections.

Discussion

The analysis demonstrates that business network constructs can contribute significantly to our understanding of business relationships corresponding to the second of the two objectives for network theory proposed by Salancik (1995). It also supports the view that, although within-relationship antecedents can explain important within-relationship consequences, relationships should not be considered in isolation. Thus, relationship commitment, which is frequently considered a critical variable in relationship models, is significantly affected by business network connection. Granovetter's (1985, 1992) warning for dyadic atomization is supported by the findings.

Moreover, the findings also correspond to the first of the two network theory objectives according to Salancik (1995). The within-relationship construct trust explains how network relationships are connected to one another. This means that the study contributes to our understanding of how self-regulating networks without network brokers or network captains can be formed and transformed.

This implies that the business network context is not an externally given constraint that determines the relation between the two partners, as implied by experimental research on power relations in exchange networks (Cook and Emerson, 1984; Patton and Willer, 1990), and which also is a characteristic of Burt's (1992) analysis of structural holes. It seems that the exchange partners in the relationship development process interactively draw the business network context into the relationship. Business networks are created and restructured when the firms develop relationships and coordinate activities across relationships.

It is worth noting that business network coordination engages both relationship partners. It does not concern the two firms separately but jointly. This indicates that dyadic business relationships really are jointly controlled and coordinated. Evidently, there are organizing and structuring processes that involve several firms in the market. All this supports Granovetter's (1985, 1992) notion of embeddedness and Uzzi's (1997) discussion of the paradox of embeddedness. In his analysis of structural embeddedness Uzzi places attention on vertically connected relations. Our findings complement his finding by demonstrating how horizontally connected relations contribute to structural embeddedness and that dyadic relationships are embedded in an integrated context of relationships.

Interestingly, in addition to the hypothesized relations our results confirm, the LISREL analysis provides the unexpected finding that customer opportunism has a positive effect on business network connection. Our interpretation of this is that, in addition to the coordinating role hypothesized, the business network connections can play a monitoring and controlling role in the relationship. By bringing in business network connections, the supplier mitigates customer opportunism as proposed by transaction cost economics (Williamson, 1985) and consistent with predictions based on the resource dependence perspective (Pfeffer

and Salancik 1978). As indicated by the analysis, this is done without affecting relationship commitment.

This suggests that, in the course of the relationship development process, the business network may be brought into the focal relationship by two different mechanisms. The first, as hypothesized, is business network coordination between trusting partners and aims at raising productivity and transaction value. The second can be called “business network control” and aims at controlling counterpart opportunism.

The impact of each of the two exogenous variables is consistent with the two mechanisms. Trust drives the relationship development process by increasing commitment both directly and through business network coordination. Customer opportunism, which can be expected to inhibit the development, has a negative direct effect on relationship commitment and a positive indirect effect through business network connection.

It is interesting that while trust in a relationship can contribute to explaining how self-regulated networks are formed and grow, our analysis indicates how suspicions that network partners are opportunistic can explain how control processes across relationships can develop. As an instance, we have reason to expect formalization of network organizations when network partners not are reliable any longer.

It may seem somewhat deterministic that trust and customer opportunism, which are strongly negatively correlated, both connect the business network to the focal relationship. Both contribute to business network structuring. It is, however, important to observe that this development concerns only ongoing business relationships while ordinary arm’s-length market relations are not influenced by this process and that, in a competitive market there are many other firms trying to replace relationship partners. Our findings on trust and opportunism is an answer to Kollock’s (1994) call for inclusion of both these variables in social exchange research.

Future research

The findings reported here must be considered as preliminary, but they do indicate that further research along this line can be fruitful. The business network connection construct in particular, is of interest. In the present model, the connected relationships with the supplier's other customer and the customer's supplementary supplier are the best indicators. In another model focusing on interdependence between the partners, the connected relationships along the value chain, the supplier's supplier and the customer's customer, are the best indicators. In still another model the connected relationships with both the supplier's and the customer's supplier are most valid. Thus the business network connection construct displays different faces in different model structures, indicating that although the business network context, in its entirety, is important, it typically encompasses different connected relationships depending on the problem in focus. There is reason to try to explain why connected relationships with different network partners are important in different network situations.

In fact, a separate LISREL analysis including also the customer's connected relationship with a competitor to the supplier gives some additional insight. It turns out that, in the context of our model, the importance of this connected relationship is also a valid indicator of business network connection. However, the resulting structural model could not be retained, since six modifications were required. Interestingly, addition of a direct relation from either trust or opportunism to commitment made it possible to retain the model with three modifications. And though three modifications does diminish the validity of the structural model, it is an interesting finding that competitor relationships can also be part of the business network connection construct with a positive influence on relationship commitment. This indicates that the generic roles ascribed to different actors on the basis of received neo-classical theory can be questioned in the context of business networks.

Competitors can very well be jointly involved in network organizing processes (Porac, Thomas and Baden-Fuller 1989). And competitors are embedded in shared business network structures.

Evidently, our finding that business network connection may represent two different theoretical constructs warrants further research. One way of approaching this would be to develop structural models that include both business network coordination and business network control constructs. This could be done by developing indicators based on the perceived coordination between activities in the focal relationship and connected relationships, on the one hand, and indicators that capture how the different connected relationships are used to constrain opportunism in the focal relationship, on the other. There is reason to expect that these indicators should be affected differently by the antecedents and have different consequences. Although we would expect that the two constructs are closely related to each other, since strong business network coordination requires strict control, we can also expect that in cases where there is strong customer opportunism there will be a difference.

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Figure 1. The Hypothesized Structural Model.

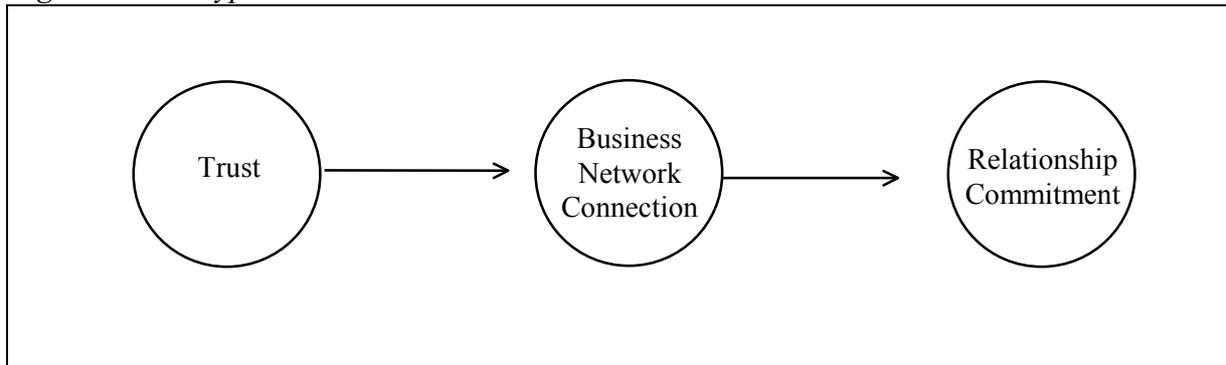


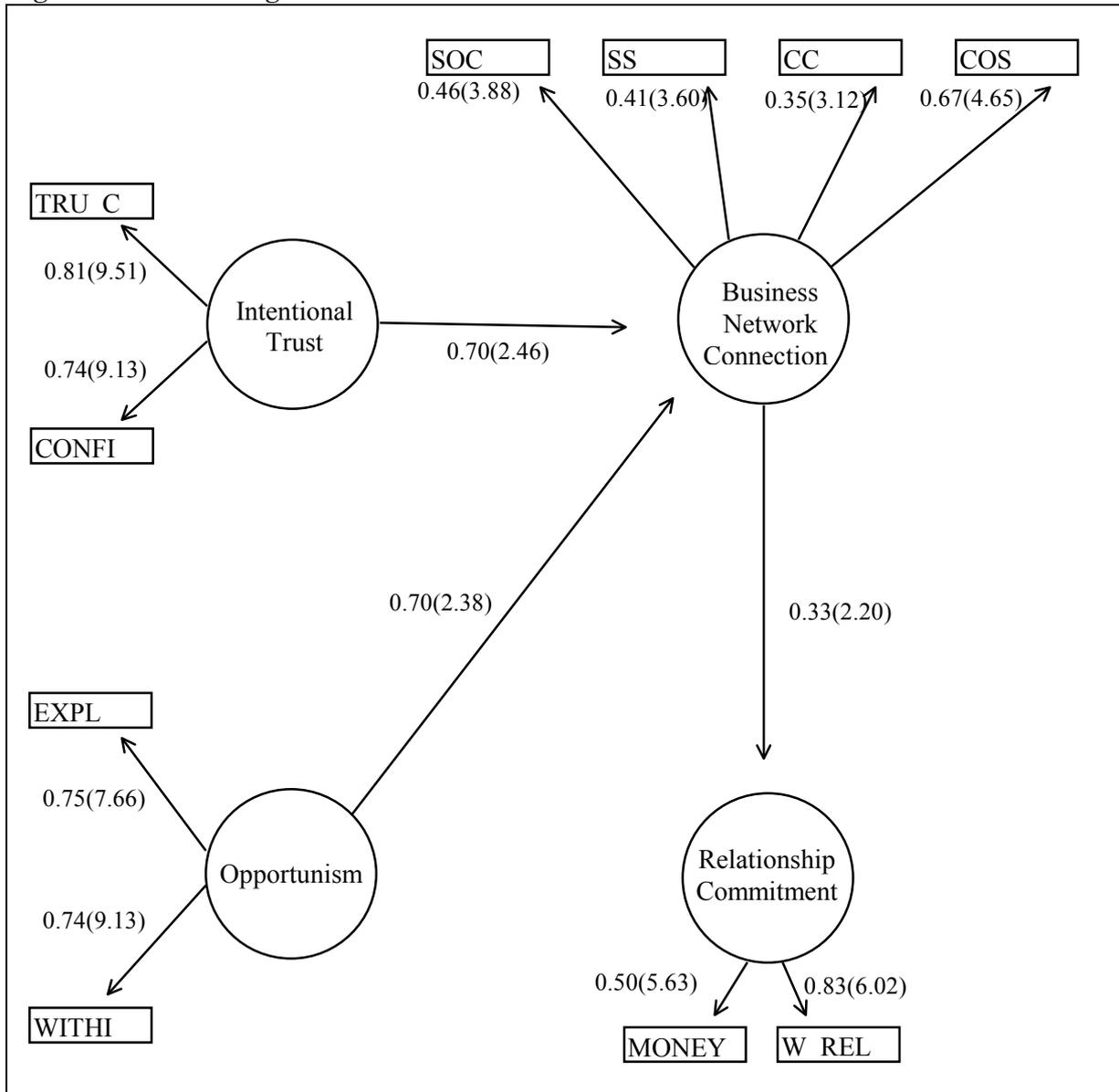
Table 1. The basic dimensions for structural equation models in LISREL.

		Causal dimensions	
		Indicator - Construct	Construct - Model
Structural dimensions	Error covariance		
	Correlations		

Table 2. The constructs and their indicators.

<i>Indicator</i>	<i>Abbreviation</i>	<i>Factor Loading</i>	<i>T-value</i>	<i>R2-value</i>
<i>Trust</i>				
We feel that we can trust this customer completely	TRU_C	0.81	9.47	0.66
We can trust the information we receive from this customer	CONFI	0.74	9.10	0.57
<i>Opportunism</i>				
This customer tries to exploit the advantages of our cooperation for his own sake.	EXPL	0.75	7.63	0.57
This customer conceals important information from us.	WITHI	0.64	6.72	0.41
<i>Business network connection</i>				
To what extent is your business with this customer affected by any of your own other customers?	SOC	0.46	3.87	0.21
To what extent is your business with this customer affected by any of your own suppliers?	SS	0.41	3.59	0.17
To what extent is your business with this customer affected by any of his own customers?	CC	0.35	3.11	0.13
To what extent is your business with this customer affected by any of his own other suppliers of products supplementary to yours?	COS	0.67	4.63	0.45
<i>Relationship commitment</i>				
We consider the exchange with this customer as part of a wider relationship with him.	W_REL	0.83	5.99	0.68
This customer is prepared to invest time and money in developing our relation.	MONEY	0.50	5.61	0.24

Figure 2. The resulting structural model.

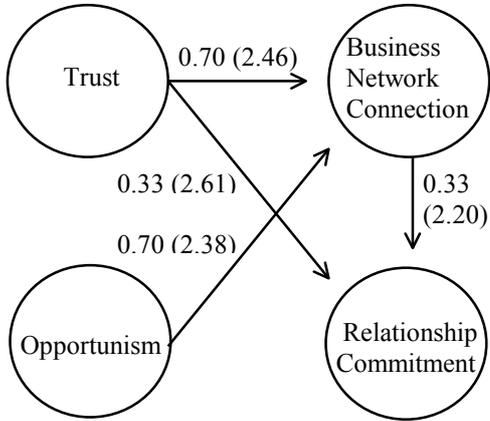


Note: Model χ^2 is 47.81 with 36 degrees of freedom. The p-value is 0.09. The model was modified by adding error covariances between SOWS and MONEY (t-value 4.13), and also between CONFI and MONEY (t-value 4.96).

Figure 3. Two models for detecting the effect of trust and opportunism on relationship commitment.

Model A: Causal effect from Trust to Commitment added

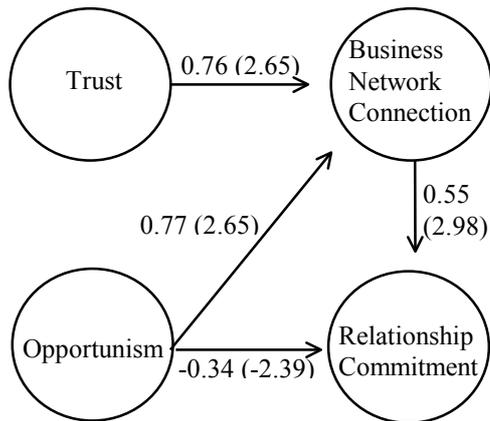
Total and indirect effect of Trust and Opportunism on Commitment



Total effects:
Trust to Commitment is 0.56 (3.37)
Opportunism to Commitment is 0.23 (1.89)

Indirect effects:
Trust to Commitment is 0.23 (1.89)
Opportunism to Commitment is 0.23 (1.89)

Model B: Causal effect from Opportunism to Commitment added



Total effects:
Trust to Commitment is 0.42 (2.48)
Opportunism to Commitment is 0.09 (0.53)

Indirect effects:
Trust to Commitment is 0.42 (2.48)
Opportunism to Commitment is 0.42 (2.40)

Appendix. Correlation Matrix and List of Indicators.

	CC	COS	SOC	SS	W_REL	MONEY	TRU_C	EXPL	WITHI	CONFI
CC	1.000									
COS	0.195	1.000								
SOC	0.130	0.322	1.000							
SS	0.254	0.289	0.121	1.000						
W_REL	0.130	0.267	0.200	0.023	1.000					
MONEY	0.264	0.134	0.026	0.332	0.365	1.000				
TRU_C	-0.050	0.120	0.052	0.254	0.229	0.284	1.000			
EXPL	0.168	0.120	0.181	-0.028	-0.130	-0.086	-0.394	1.000		
WITHI	0.173	0.088	0.085	0.022	-0.022	-0.068	-0.351	0.484	1.000	
CONFI	0.085	0.132	0.065	0.162	0.214	0.523	0.637	-0.342	-0.272	1.000

Variable	Indicator/question
CC	To what extent is your business with this customer affected by any of his own customers?
COS	To what extent is your business with this customer affected by any of his own other suppliers of products supplementary to yours?
SOC	To what extent is your business with this customer affected by any of your own other customers?
SS	To what extent is your business with this customer affected by any of your own suppliers?
W_REL	We consider the exchange with this customer as part of a wider relationship with him.
MONEY	This customer is prepared to invest time and money in developing our relation.
TRU_C	We feel that we can trust this customer completely
EXPL	This customer tries to exploit the advantages of our cooperation for his own sake.
WITHI	This customer conceals important information from us.
CONFI	We can trust the information we receive from this customer