The Network Competence - Performance Relationship: Effects and Moderators

1.1 Inter-firm networks and strategic alliances - international versus regional patterns
or
3.1 Knowledge creation and transfer in inter-organizational networks

Workshop Paper for EIBA 2000

Thomas Ritter
School of Management, University of Bath, Bath BA2 7AY, United Kingdom
Tel: +44 (0) 1225 32 3319, Fax: +44 (0) 1225 32 3902
Email: t.ritter@bath.ac.uk

ABSTRACT: This paper builds upon research in inter-organizational relationship and network management. It analysis the impact of the company-specific ability to handle, use and exploit inter-organizational relationships, which is called network competence, on performance measure. Drawing upon a sample of 308 German mechanical and electrical engineering companies, results of a LISREL analysis reveal that network competence has a strong positive influence on the extent of inter-organizational technological collaborations, on a firm's product and process innovation success, and a tentative positive effect on corporate success. Furthermore, a moderator analysis reveals that network competence is more important when customer demands and requirements are stable as well as when the firm deals with technically complex products and services.

KEY WORDS: management, networks, competence, innovation success

Introduction

Nowadays, the fact is acknowledged that firms are embedded in international networks of cooperative and competitive relations with other organizations (Archol and Kotler, 1999, Anderson, Håkansson and Johanson, 1994, Ford et al, 1998). Inter-organizational relationships are seen as long-term oriented arrangements between organizations (firms, institutions, agencies, etc.), which are "maintained for some overall functional purpose" (Håkansson and Turnbull 1982, p.1). Functions of relationships vary from increasing sales volume or profit in a relationship, gaining access to new markets or third parties, or jointly developing innovations (Walter, Ritter and Gemünden 1999 for an overview). The purpose of a relationship is not necessarily found within the relationship itself but may be found in a network of connected relationships (Anderson, Håkansson and Johanson, 1994), e.g. when a relationship with one actor allows access to other organizations (reference effect). As we move into the networked economy of the next millennium (Archol and Kotler, 1999), a firm's ability to initiate, handle, use, and terminate inter-organizational relationships becomes of central importance.

The importance of being able to maintain and create value through and in relationships and networks is not limited to local markets. Nowadays most firms act on a global market, showing a high degree of internationalization. According to Walter and Ritter (2000), value creation in international relationships depends on a higher degree of trust and commitment and as such, are more difficult to manage. This can be explained through larger social, cultural, technical, and geographical distances between the firms.

Even more important, many studies suggest that the internationalisation process must be understood in terms of relationships and networks (Johanson and Mattsson, 1988). Companies

typically start to act on international markets through the development of inter-organisational relationships with organisations in foreign markets. Relationships and networks are also seen as a means to accelerate the internationalisation process (Coviello and Munro, 1995).

Furthermore, companies with subsidiaries in different countries allocate more and more responsibilities to their foreign units. Despite the fact that those relations are still intra-organisational they become more and more like inter-organisational relationships due to an increasing lack of hierarchical (intra-organisational) power. Trust and commitment between the units becomes more important. This is reflected in a stream of literature, which treats organisations as networks.

Therefore, internationalization and globalization are not separate from networking. Firms on international markets are part of a large network of actors. Success in such settings is dependent upon the degree of network competence a firm has. As such it is important to understand a firm's network competence and to analyze the impact of network competence on performance.

It has been argued that an individual firm cannot influence a network and that networks simply evolve. Even though individual companies may be limited in their actions (Ford, 1997, p. 559, Wilkinson and Young, 1994, p.76), each actor in a network has some influence on the network, which can be managed more or less efficiently.

The paper is organized as follows: In the next section, the concept of network competence is introduced. Then we derive hypotheses about the impact of network competence on performance measures and also look at potential moderators. Next, the results of a study designed to test these hypotheses are described. Finally, we discuss the results and their implications for research and practice.

Network Competence

Competence has been defined as a process of activities (Day, 1994, Drucker, 1985, Li and Calantone, 1998) as well as qualifications and skills. With regard to network competence we distinguish between the tasks that need to be performed in order to manage a company's technological network and the qualifications, skills and knowledge that are needed in order to perform these tasks (see also Gemünden and Ritter, 1997, Ritter, 1999). These elements are discussed below.

Network Management Tasks

A distinction may be made between tasks which are relevant to managing a single relationship (a dyad) and tasks which are necessary to manage a portfolio of relationships or a network as a whole (Ford, 1980, Mattsson, 1985, Möller and Halinen, 1999, Wilkinson and Young, 1994).

Relationship-Specific Tasks: Relationship-specific tasks refer to activities to establish and maintain a single relationship. The literature on relationship management suggests three different types of relationship-specific tasks: Inter-organizational relationships do not start on their own, there needs to be some sort of *initiation*. Typical initiation activities to identify potential partners are visits to trade shows, monitoring industry-related journals and exploiting hints from existing partners. Company visits and the distribution of information about the firm to potential partners are also initiation activities. *Exchange* of products, services, money, information, know-how, and personnel can be seen as an essential part of an inter-organizational relationship and as such is another important task in relationship management (Anderson and Narus, 1984, 1990; Bagozzi, 1975, Dwyer, Schurr and Oh, 1987, Homans, 1958). But normally, a simple exchange between

organizations is not sufficient for a relationship. The two organizations involved need to synchronize their activities so that the activities of both organizations are in tune with each other (Mohr and Nevin, 1990). Such *coordination* includes the establishment and use of formal roles and procedures and the utilization of constructive conflict resolution mechanisms (cf. Helfert and Vith, 1999; Ruekert and Walker, 1987).

Cross-Relational Tasks. Drawing on a subdivision of managerial tasks widely used in general management literature (Carrol and Gillen, 1987), four different cross-relational tasks can be identified. *Planning* involves internal analysis (resources, strength and weaknesses within the company), network analysis (quality of external contributions, fit to internal resources, strategic and resource fit within the network), and environmental analysis (competitors, general technological and market developments). *Organizing* activities cover, e.g., resource allocation to specific relationships and specification of ways of communicating between people dealing with relationships inside the firm. *Staffing* tasks involve guidance and coordination of employees involved in relationship management activities. Conflicts between employees can occur and must be solved when several relationships compete for the same resources within a company. *Controlling* is both the final and (through a feedback loop) the first stage of the management cycle. Control activities can be internally oriented (e.g. contribution of personnel, quantity and quality of communication activities) as well as externally oriented (e.g. contributions of external partners or performance of the network as a whole).

Figure 1 illustrates the interplay between cross-relational and relationship-specific tasks. It highlights that effective network management requires both elements.

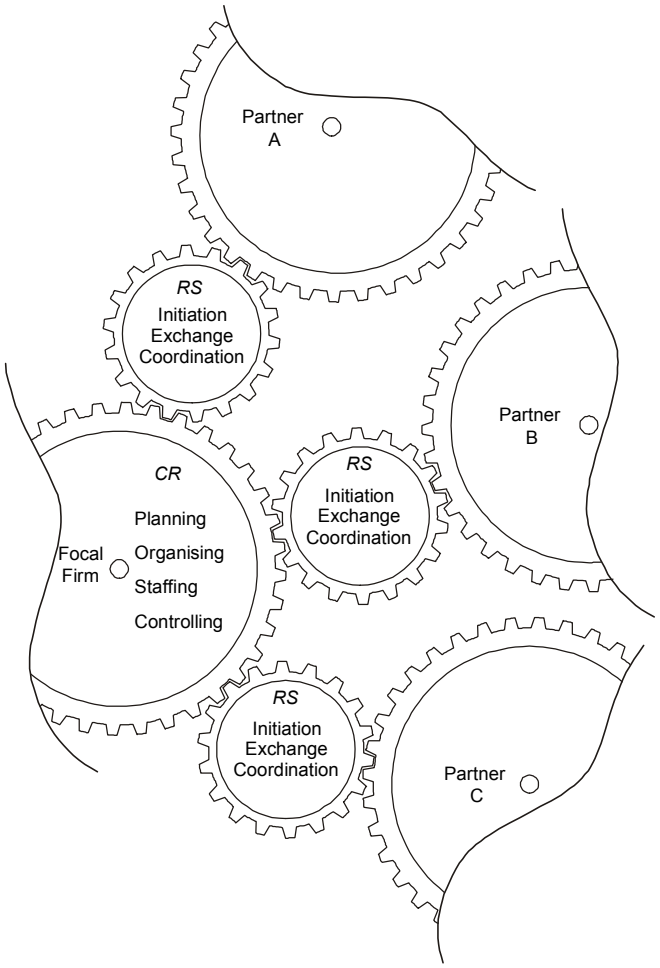

Figure 1: Cross-relational (CR) and relationship-specific (RS) network management tasks

Network Management Qualifications

The execution of the network management tasks is a complex process and as such it requires various types of qualifications. A distinction can be made between specialist and social qualifications (Helfert, 1998).

Specialist qualifications include those, which are necessary to handle "the technical side" of relationships: Technical skills are important to understand partners in terms of their technical needs, requirements and capabilities. Economic skills are required to define inputs and set prices. This is of particular interest in collaborative innovation as the division of rewards can be a source

of some conflict between partners. This also leads to the importance of skills in legal matters. These are of interest for setting up contracts but are also critical in collaborative innovation developments where it is hard to define the outcome from the beginning. Knowledge about the other actors is an important resource. This knowledge includes information about the operations of partners, their personnel and resources, which are important for understanding their behavior and the development of the network. In addition, experiential knowledge resulting from interactions with external partners is crucial. Such knowledge can be used to anticipate and evaluate critical situations and to select appropriate action.

Social qualifications are the extent to which a person is able to exhibit independent, prudent and useful behavior in social settings. It includes several dimensions such as communication ability, extraversion, conflict management skills, empathy, emotional stability, self-reflectiveness, sense of justice, and cooperativeness. Social qualifications are of special interest because of the importance of interpersonal interactions and relationships in business relations.

Degree of Network Competence

From the foregoing discussion we can see that a firm's degree of network competence is a two-dimensional construct that can be defined as (a) the degree of network management task execution and (b) the extent of network management qualifications possessed by the people handling a company's relationships. Figure 2 provides a summary of the components of network competence.

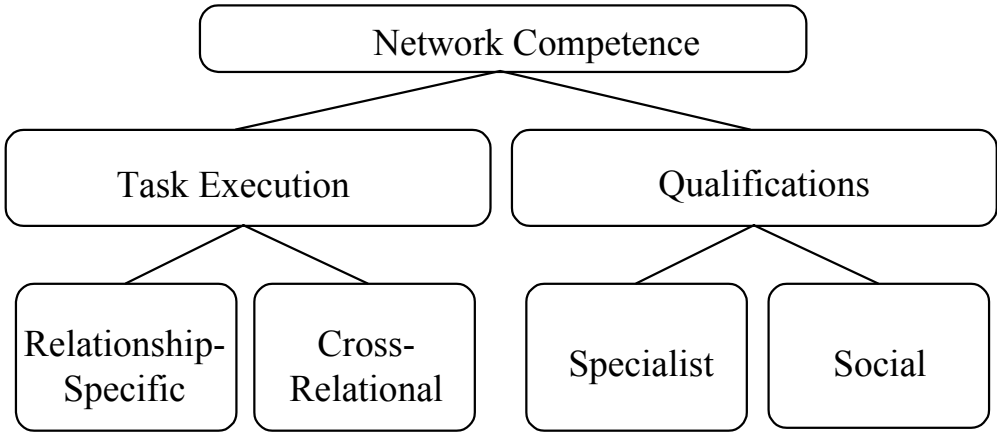

Figure 2: Elements of a company's network competence (Source: Ritter 1999, p. 471)

The Impact of Network Competence on a Company's Technological Interweavement, its Innovation Success and its Corporate Success

"The role, development and performance of companies will be explained by their ability to develop relationships" (Håkansson and Snehota, 1995, p. 4). We will verify this statement by considering the impact of network competence, i.e. the ability to develop relationships. The relationships between a firm's network competence (i.e. a firm's ability to manage their network of relationships effectively) and output measure such as a firm's technological interweavement, its innovation success and its corporate success are explored in the following.

The term technological interweavement "describes the totality of a firm's technology-oriented relationships aimed at acquiring, jointly developing or diffusing of technological know-how and resources" (Gemünden, Heydebreck and Herden, 1992, Gemünden, Ritter and Heydebreck, 1996, p. 451). Many authors have highlighted potential contributions of external partners to a company's innovation efforts and the positive impact of technological interweavement on a firm's innovation success has received almost universal support in a wide range of studies (e.g.

Biemans, 1992, Deeds and Hill, 1996, Hagedoorn and Schakenraad, 1994, Håkansson, 1987, 1989, Powell, Koput and Smith-Doerr, 1996, Shan, Walker and Kogut, 1994, von Hippel, 1986, 1988). Figure 3 indicates the variety of actors that can offer valuable contributions.

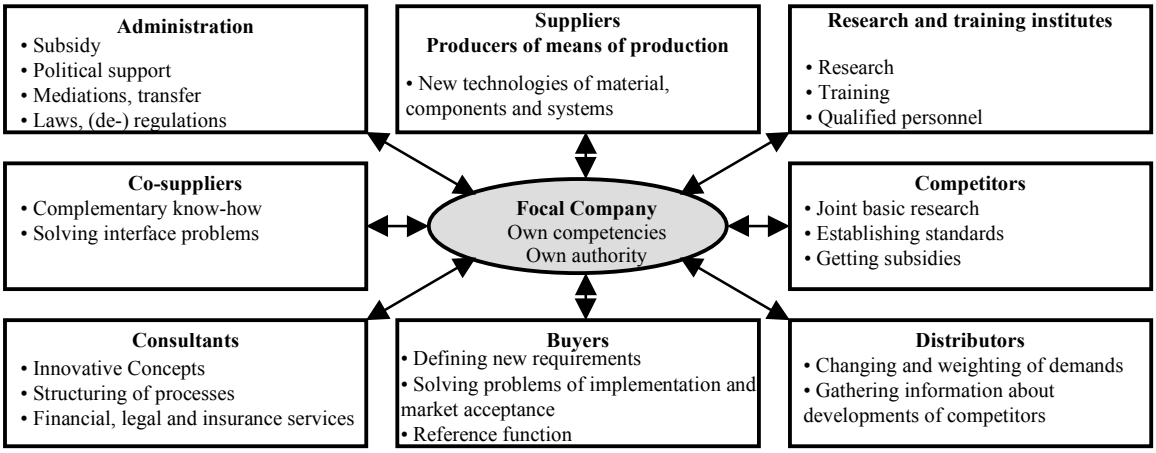

Figure 3: Innovation partners and their contributions
(adapted from Gemünden, Ritter and Heydebreck 1996, p. 450)

There are several relationship barriers that may weaken the existence and the effectiveness of cooperative relationships (cf. Walter, 1998, pp. 31-60). Network management activities reduce these barriers and also ensure that new partners for technological exchange will be effectively found and maybe convinced of the advantages of collaboration. Through more intensive initiation activities, firms maybe able to realize first mover advantages in tying up relationships with important partners. Furthermore, other organizations will have a greater interest in cooperating with a network-competent firm because the likelihood of a successful relationship is higher. Network competence also leads to the exploration and exploitation of new areas of cooperation in existing relationships as a result of increased trust and commitment.

Hypothesis 1: A firm's degree of network competence has a positive impact on its degree of technological interweavement.

Performing network management tasks with the necessary qualifications is likely to result in internal innovation processes that are more market-oriented because information about the market is available within the company through inter-organizational relationships (Han, Kim and Srivastava, 1999). Due to the increasing importance of relationship marketing (Grönross, 1994; Mattsson, 1997), networking activities may serve as a basis for selling innovative products to customers with whom the company is not collaborating technologically. Thus, network competence contributes to a company's innovation success directly; not only through increasing the degree of technological interweavement. Furthermore, network management qualifications are useful for successful completion of internal innovation processes as those require social interaction and managerial skills as well.

Hypothesis 2: A firm's degree of network competence has a positive impact on its innovation success.

A firm's ability to handle networks does not stop with innovation networks. Even though network competence has been regarded here in terms of innovation networks it is reasonable to assume that network competent firms are able to achieve additional benefits, such to offer more value to customers, optimize their supply networks, have additional market knowledge, and so forth. Network competence might also help in developing stakeholder and public relations which in turn may support corporate success. Therefore, a direct effect of network competence on corporate success can be assumed.

Hypothesis 3: A firm's degree of network competence has a positive impact on its corporate success.

A positive impact of technological interweavement on innovation success is suggested by several studies (see above). The rational behind the positive impact is that through collaboration, more resources can be utilized in the development process, i.e. more manpower, a larger pool of technological facilities, larger quantity and increased quality of information and ideas. Also, more innovation projects can be carried out due to more resources, which reduces the negative impact of failing individual developments. It is also reasonable to assume that technological interweavement offers good marketing opportunities, efficient supplies and a wealth of market knowledge which in turn will contribute to corporate success.

Hypothesis 4: A firm's degree of technological interweavement has a positive impact on its product and process innovation success (4a) and its corporate success (4b).

Many studies have shown the positive effect of innovation success on corporate measures (e.g. Li and Calantone, 1999, Han, Kim and Srivastava, 1999). Therefore, this relationship is also expected in this study.

Hypothesis 5: A firm's degree of innovation success has a positive impact on its corporate success.

Moderator variables

All hypotheses developed above are of general nature and should therefore stand true under different circumstance. However, the role of network competence might be higher (or lower) in different settings. Two different moderating variables are considered here: Dynamics of customer demands and requirements and complexity of the firm’s products and processes.

Customer demands vary from industry to industry and even inside traditionally defined industries, they might be very different. The establishment of long-term relationships presupposes that both

sides have a long-term need for one others offerings. In very dynamic settings where customer demands and requirements change often and significantly it is hard for firms to establish long term relationships as many things are handled in a "one off" fashion. On the other hand, in more stable environments it makes sense to try and understand each other business. Also, firms need to relate to one other in order to be in a position to offer more value to each other. In this process long-term interactions between firms are very important.

Hypothesis 6: The impact of network competence on the performance measures increases with a decreasing degree of change in customers' demands and requirements.

The need for closer relationships (and thus for network competence to handle these inter-organizational relationships) will also increase when the offerings exchanged between the different partner and the production processes are very complex. Firms need to interact to understand the products and processes. More inter-organizational coordination is needed in order to synchronize the different but related activities in the wider network. As there is a limit to what can be passed on as explicit knowledge in arm's length relations, increased complexity demands more interaction and as such, network competence is excepted to have a stronger impact.

Hypothesis 7: The impact of network competence on the performance measures increases with a increasing degree of complexity of products and process.

Empirical results

Data Collection and Sample

741 German companies operating in the fields of mechanical and electrical engineering, measurement technology and control engineering were contacted and asked to participate in the study. Data were collected between August and December 1997 via personal interviews using a standardized questionnaire. We obtained data from 308 companies, which is a response rate of 43,3%.

To identify key informants (cf. John and Reve, 1982, Philipps, 1981) we asked for respondents with an overview of the company, the firm's technological network and its innovation success. Our respondents were CEOs (in 50 percent of the cases), heads of the R&D department (25 percent) or (in all other cases), we interviewed the person responsible for (inter-organizational) innovation development.

Our sample consists mainly of medium-sized companies: 40.7% of the companies have between 50 and 249 employees and 24.9% have between 250 and 999 employees. The remaining companies are either very small (24.2% with less than 50 employees) or larger corporations with more than 1000 employees (10.1%). Companies in our sample operate in mechanical and electrical engineering, measurement technology and control engineering. Most of the interviewed companies have been established for between 10 and 50 years (62.8%).

Operationalization and Measurement

All indicators of constructs were measured using 7-point multi-item scales. Multi-item measures were developed based on Cronbach's alpha and item-to-total correlations exceeding appropriate levels (Cronbach's alpha > 0.60, cf. McAllister, 1995, p. 36; item-to-total correlation > 0.30, cf.

Kumar, Scheer & Steenkamp, 1995). Convergent validity was checked through exploratory factor analyses. In all cases, only one factor was extracted by the Kaiser criterion (eigenvalue above 1).

For each of the seven network management tasks multi-item scales were used describing typical activities of the task in question. Planning referred to activities like analyzing the quality of technological know-how, assessing the capabilities of partners and monitoring technological developments (17 items, Cronbachs Alpha =.87). Allocation of available financial resources to and discussion of specific aims of individual relationships as well as setting up regular meetings were used to capture the extent of organizing network management (8 items, Cronbachs Alpha =.83). Staffing was measured by looking at allocating staff to relationships, matching activities between them and handling conflicts between personnel (8 items, Cronbachs Alpha =.85). The degree of executing the controlling task was judged by looking at staff and partner monitoring (7 items, Cronbachs Alpha =.85). These tasks were combined to cross-relational task execution. Initiation was measured as the extent to which a firm performs activities such as attending trade shows and using partners or public sources to look for potential collaborators (8 items, Cronbachs Alpha =.82). Exchange activities include the degree of effort to communicate, inform and visit partners (9 items, Cronbachs Alpha =.87). Activities to synchronize the companies, to solve conflicts, and to incorporate partners' demands were measured for coordination (10 items, Cronbachs Alpha =.87). These task measures were combined into a relational task execution measure.

Specialist qualifications were measured assessing level of technical, economic and collaborative expertise as well as knowledge about the firm and its partners (12 items, Cronbachs Alpha =.77).

Social qualifications were captured by looking at staffs' ability to communicate, interact and collaborate with other persons (14 items, Cronbachs Alpha =.89).

Technological interweavement was measured as the extent to which external partners are integrated into a firm's idea generation, conceptualization, development, and testing (4 items for each type of partner, Cronbachs Alpha between .80 and .87).

For both product and process innovation success, separate scales were used capturing the position of the company in relation to competitors and the technological state-of-the-art (3 items each, Cronbachs Alpha =.72 and .78). Given the debate about different measurements of innovation success (Cooper, 1984, 1985, Hauschildt, 1991, Smith, 1992), respondents were additionally ask about product and process innovation rates (sales of products less then three years old, percentage of production on facilities less then three years old) in order to validate our measurement. In both cases innovation rates correlate significantly with the scales. Thus, our measures appear to be reliable.

The corporate success was measured as the degree to which the informant was satisfied with turnover, profit and market share (3 items, Cronbachs alpha =.75). This measure takes into account the competitive situation as well as firm size and industry characteristics.

The measurement model was tested for validity and reliability following the procedure suggested by Anderson & Gerbing (1988). The results of a confirmatory factor analysis using LISREL showed that the measurement model meets the widely employed guidelines (cf. Homburg and Baumgartner, 1998, Homburg and Giering, 1996). Regarding detail fit criteria, very few measures fall short of desired thresholds, which is regarded as acceptable (Homburg and Baumgartner, 1998, Homburg and Giering, 1996).

Data Analysis

Data were analyzed using LISREL 8 (Jöreskog and Sörbom, 1996) for the assessment of hypothese 1 to 4. The covariation matrix of the 19 first-order constructs was entered into an Maximum Likelihood analysis ($\chi 2_{(59)}$ = 155.41; p = 0,00; GFI = 0.924; AGFI = 0.883; NFI = 0.896; CFI = 0.931; RMR = 0,054). Even though some fit measure slightly undercut the treshhold values the results show reasonably good fit with the model. The Fornell/Larcker criterion (cf. Fornell and Larcker, 1981) for discriminant validity was met in all cases for the measurement and the structural model. Thus, an adequate level of fit in both the measurement model and the structural model can be assumed. Figure 5 shows the test results regarding the structural model, including the structural equation coefficients, the t-values, and the explained variance of endogenous constructs. Four hypotheses are significant, one hypothesis is tentatively positive and hypothesis 5 was not supported by the data.

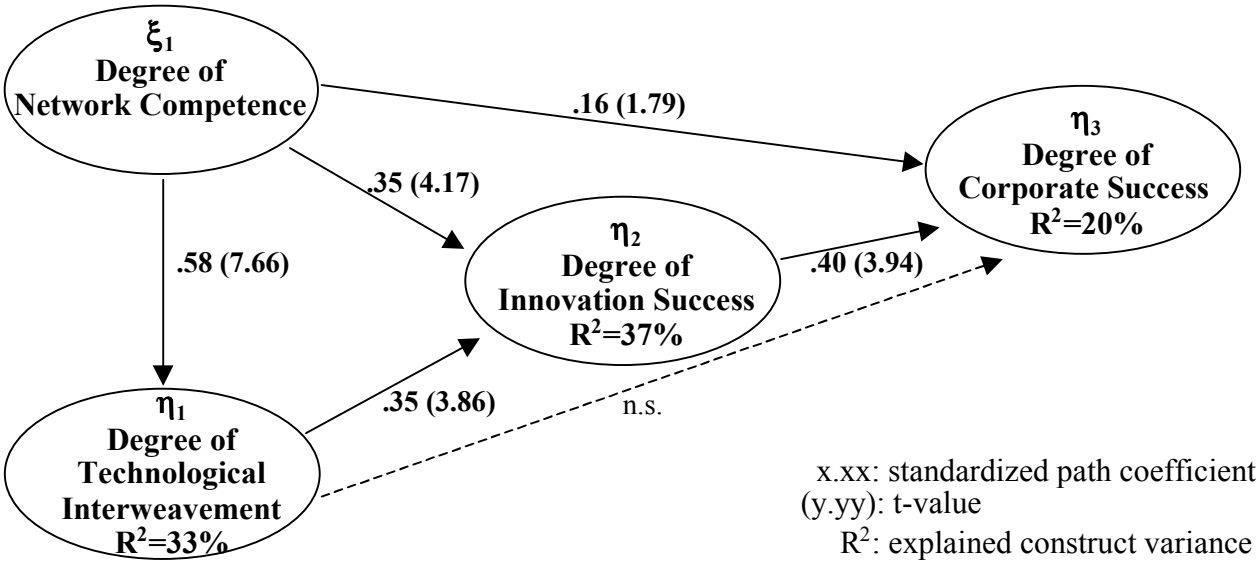

Figure 5: Results of the LISREL analysis

The results of the LISREL analysis show that network competence is a powerful predictor for technological interweavement and innovation success and also has a tentatively positive impact on corporate success. With that network management qualifications and network management tasks have been identified as important success factors: A firm's network competence matters. Through network competence, firms are able to intensively involve others in their technological development process. Thus, companies are in a position to manage networks to the extent that they can develop the necessary network competence. Furthermore, a firm is not only able to intensify its external relations but can also improve its performance. Thus, network competence is not only improving the means but also the ends. The result also emphasizes that apart from internal technological competencies network competence is important for achieving innovation success. The results also show that network competence as a tentatively positive, direct impact on corporate success in addition to the indirect effects. Overall, network competence does support success on the corporate level.

Analysis of Moderation Effects

Customer dynamics were measured with two items on a 7-point-scale (Cronbachs Alpha =.82): (1) Customer demands and requirements change permanently; (2) Customer demands and requirements change dramatically. For capturing the complexity of products exchanged, four items were used (Cronbachs Alpha =.64): (1) The degree of the firm's production complexity; (2) The degree of the firm's product complexity; (3) Customers' need for prior user know-how; (4) The firm's need for know-how in order to use suppliers' products.

These measures were multiplied with the overall network competence score and were used as independent variables in regression analyses. Table 1 gives an overview over the results.

Dependent variable Independent variable	Technological interweavement	Innovation success	Corporate success
Customer dynamics x network competence	n.s.	-.113 (.080)	n.s.
Production complexity x network competence	.169 (.018)	.242 (.001)	n.s.
Network competence	.371 (.000)	.184 (.023)	.149 (.094)
Technological Interweavement	-	.263 (.000)	-
Innovation success	-	-	.298 (.000)
R^2	28.5	26.9	12.4
F	40.324 (.000)	27.901 (.000)	8.568 (.000)

Table 1: Results of regression analyses

Regarding technological interweavement the regression analysis shows that network competence has a stronger impact when the firm's products and processes are more complex. This is in line with hypothesis 7. The need for a higher degree of interaction makes network competence even more important. No moderating effect could be found for dynamics in customers' needs and requirements.

Looking at innovation success both moderating variables show the suggested effects. The more "chaotic" customers' demands are, the less network competence can support innovation success. There is no benefit to partner closely with customers as no-one knows whether or not the customer can be satisfied with the existing competencies. Also, in terms of innovation, in such markets it is nearly impossible to figure out a lead user as this can change due to the dynamics in the market.

None of the two moderator variables have significant effects on corporate success. The impact of network competence does not seem to be effected by the environment the firm is in. However, corporate success is influenced by many different factors, of with network competence and innovation success are only two. In further analysis other factors need to be taken into equation. Overall, some support was found for the moderating effects.

Outlook

In this paper the network competence – performance relationship had been analyzed. Hereby, significant effects were found which highlighted the strategic importance of network competence. In order to achieve competitive advantages in the network economy, firms need to build up and increase their network competence. Networking needs to move upwards on the agenda list and should not be regarded as a pure pleasure activity. Therefore, firms are advised to analyze their network competence in order to find out potential areas for improvements.

It is not a company's choice whether relationships are there or not. Relationships and networks exist and a company is embedded into a network. However, it is a company's choice to develop network competence in order to survive in the networked economy. As the research shows, organizations can turn the burden of relationships into competitive advantage, especially with dealing with complex products and processes as well as with rather stable customer demands and requirements.

Further research may address the role of network competence in other areas than innovation, e.g. distribution, internationalization or supply management. Also there are many other potential moderating variables with might offer additional insight into the role of network competence.

REFERENCES

Achrol, Ravi S., and Philip Kotler. 1999. Marketing in the Network Economy. *Journal of Marketing* 63 (special issue 1999):146-163.

Anderson, James C., and David Gerbing. 1988. Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin* 103:411-423.

Anderson, James C., Håkan Håkansson, and Jan Johanson. 1994. Dyadic Business Relationships Within a Business Network Context. *Journal of Marketing* 58 (4):1-15.

Anderson, James C., and James A. Narus. 1984. A Model of the Distributor's Perspective of Distributor-Manufaturer Working Relationship. *Journal of Marketing* 48 (4):62-74.

Anderson, James C., and James A. Narus. 1990. A Model of Distributor Firm and Manufacturing Firm Working Relationships. *Journal of Marketing* 54 (1):42-58.

Bagozzi, Richard P. 1975. Marketing as Exchange. *Journal of Marketing* 39 (4):32-39.

Biemans, Wim G. 1992. *Managing Innovation within Networks.* London & New York: Routledge.

Carroll, Stephen J., and D. J. Gillen. 1987. Are the Classical Management Functions Useful in Discribing Managerial Work? *Academy of Management Review* 12 (1):38-51.

Cooper, Robert G. 1984. New Product Strategies: What Distinguishes the Top Performers? *Journal of Product Innovation Management* 1 (2):151-164.

Cooper, Robert G. 1985. Overall corporate strategies for new product programs. *Industrial Marketing Management* 14:183-189.

Coviello, Nicole E., and Hugh J. Munro. 1995. Growing the Entrpreneurial Firm: Networking for International Market Development. European Journal of Marketing 29 (7):49-61.

Day, George S. 1994. The Capabilities of Market-Driven Organizations. *Journal of Marketing* 58 (October):37-52.

Deeds, David L., and Charles W. L. Hill. 1996. Strategic Alliances and the Rate of New Product Development: An Empirical Study of Entrepreneurial Biotechnology Firms. *Journal of Business Venturing* 11 (1):41-55.

Drucker, Peter F. 1985. *Innovation and Entrepreneurship: Practice and Principles*. New York: Harper & Row.

Dwyer, F. Robert, Paul H. Schur, and Sejo Oh. 1987. Developing Buyer-Seller Relationships. *Journal of Marketing* 51 (April):11-27.

Ford, David. 1980. The Development of Buyer-Seller Relationships in Industrial Markets. *European Journal of Marketing* 14 (5/6):339-354.

Ford, David, ed. 1997. *Understanding Business Markets.* 2. ed. London et al.: The Dryden Press.

Ford, David, Lars-Erik Gadde, Håkan Håkansson, Anders Lundgren, Ivan Snehota, Peter Turnbull, and David Wilson. 1998. *Managing Business Relationships*. Chichester: John Wiley & Sons.

Gemünden, Hans Georg, Peter Heydebreck, and Rainer Herden. 1992. Technological Interweavement - A Means of Achieving Innovation Success. *R&D Management* 22 (4):359-376.

Gemünden, Hans Georg, and Thomas Ritter. 1997. Managing Technological Networks: The Concept of Network Competence. In *Relationships and Networks in International Markets*, edited by H. G. Gemünden, T. Ritter and A. Walter. Oxford et al.: Pergamon/Elsevier.

Gemünden, Hans Georg, Thomas Ritter, and Peter Heydebreck. 1996. Network Configuration and Innovation Success: An Empirical Analysis in German High-Tech Industries. *International Journal of Research in Marketing* 13 (5):449-462.
Grönross, Christian. 1994. From Marketing Mix to Relationship Marketing: Towards a Paradigm Shift in Marketing. *Management Decision* 32 (2):4-20.
Hagedoorn, John, and Jos Schakenraad. 1994. The Effect of Strategic Technology Alliances on Company Performance. *Strategic Management Journal* 15 (4):291-310.
Håkansson, Håkan. 1987. *Industrial Technological Development: A Network Approach.* London et al.: Croom Helm.
Håkansson, Håkan. 1989. *Corporate Technological Development: Cooperation and Networks.* London: Routledge.
Håkansson, Håkan, and Ivan Snehota. 1995. *Developing Relationships in Business Networks*. Boston: International Thomson Press.
Håkansson, Håkan, and Peter W. Turnbull. 1982. Inter-Company Relationships: An Analytical Framework. *Working Paper of the Centre for International Business Studies, Uppsala University* 1982/8.
Han, Jin K., Namwoon Kim, and Rajendra K. Srivastava. 1998. Market-Orientation and Organizational Performance: Is Innovation a Missing Link? *Journal of Marketing* 62 (October):30-45.
Hauschildt, Jürgen. 1991. Zur Messung des Innovationserfolgs. *Zeitschrift für Betriebswirtschaft* 61:451-476.
Helfert, Gabrielle. 1998. *Teams in Relatioship Marketing: Design von effektiven Kundenbeziehungsteams.* Wiesbaden: Gabler.
Helfert, Gabriele, and Katharina Vith. 1999. Relationship Marketing Teams: Improving the Utilization of Customer Relationship Potentials Through a High Team Design Quality. *Industrial Marketing Management* 28 (5):553-564.
Hippel, Eric von. 1986. Lead Users: A Source of Novel Product Concepts. *Management Science* 32 (7):791-805.
Hippel, Eric von. 1988. *The Sources of Innovation*. New York: Oxford University Press.
Homans, G. 1958. Social Behavior as Exchange. *American Journal of Sociology* 63 (May):597-606.
Homburg, Christian, and Hans Baumgartner. 1995. Beurteilung von Kausalmodellen. *Marketing - Zeitschrift für Forschung und Praxis* 17 (3):162-176.
Homburg, Christian, and Annette Giering. 1996. Konzeptualisierung und Operationalisierung komplexer Konstrukte - Ein Leitfaden für die Marketingforschung. *Marketing - Zeitschrift für Forschung und Praxis* 18 (1):5-24.
Johanson, Jan, and Lars-Gunnar Mattsson. 1988. Internationalisation in Industrial Systems: A Network Approach. In Hood, N. and Vahlne, J.E., editors. Strategies in Global Competition. Croom Helm, London:205-17.
John, George, and Torger Reve. 1982. The Reliability and Validity of Key Informant Data from Dyadic Relationships in Marketing Channels. *Journal of Marketing Research* 19 (November):517-524.
Jöreskog, Karl G., and Dag Sörbom. 1996. *LISREL 8: User's Reference Guide*. Chicago: Scientific Software.

Kumar, Nirmalya, Lisa K. Scheer, and Jan-Benedict E. M. Steenkamp. 1995. The Effects of Supplier Fairness on Vulnerable Resellers. *Journal of Marketing Research* 33 (February):54-65.

Li, Tiger, and Roger J. Calantone. 1998. The Impact of Market Knowledge Cpmpetence on New Product Advantage: Conceptualization and Empirical Examination. *Journal of Marketing* 62 (October):13-29.

Mattsson, Lars-Gunnar. 1985. An Application of a Networks Approach to Marketing - Defending and Changing Market Positions. In *Changing the Course of Marketing: Alternative Paradigms for Widening Marketing Theory*, edited by N. Dholakia and J. Arndt. Greenwich, Conn. et al.: JAI Press.

Mattsson, Lars-Gunnar. 1997. Relationship Marketing in a Network Perspective. In *Relationships and Networks in International Markets*, edited by H. G. Gemünden, T. Ritter and A. Walter. Oxford: Elsevier Science Ltd.

McAllister, Daniel J. 1995. Affect and Cognition-Based Trtust as Foundation for Interpersonal Cooperation in Organizations. *Academy of Management Journal* 38 (1):24-59.

Mohr, Jakki, and John R. Nevin. 1990. Communication Strategies in Marketing Channels: A Theoretical Perspective. *Journal of Marketing* 54 (October):36-51.

Möller, Kristian K., and Aino Halinen. 1999. Business Relationships and Networks: Managerial Challenges of Network Era. *Industrial Marketing Management* 28 (5):413-427.

Phillips, Lynn. 1981. Assessing Measurement Error in Key Informant Reports: A Methodological Note on Organizational Analysis in Marketing. *Journal of Marketing Research* 18 (November):395-415.

Powell, Walter W., Kenneth W. Koput, and Laurel Smith-Doerr. 1996. Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology. *Administrative Science Quarterly* 41:116-145.

Ritter, Thomas. 1999. The Networking Company: Antecedents for Coping With Relationships and Networks Effectively. *Industrial Marketing Management* 28 (5):467-479.

Ruekert, Robert W., and Orville C. Walter. 1987. Marketing's Interaction with Other Functional Units: A Conceptual Framework and Empirical Evidence. *Journal of Marketing* 58 (January):1-19.

Shan, Weijan, Gordon Walker, and Bruce Kogut. 1994. Interfirm Cooperation and Startup Innovation in the Biotechnology Industry. *Strategic Management Journal* 15:387-394.

Smith, Keith. 1992. Technological Innovation Indicators: Experience and Prospects. *Science and Public Policy* 6:153-170.

Walter, Achim. 1998. *Der Beziehungspromotor. Ein personaler Gestaltungsansatz für erfolgreiches Relationship Marketing.* Wiesbaden: Gabler.

Walter, Achim and Thomas Ritter. 2000. Value-Creation in Customer-Supplier Relationships: The Role of Adaptation, Trust and Commitment. *Proceedings of the 29th EMAC Conference*, Rotterdam.

Walter, Achim, Thomas Ritter, and Hans Georg Gemünden. 1999. Value-Creating Functions of Customer Relationships from a Supplier's Perspective: Theoretical Considerations and Empirical Results. Paper read at IMP Conference, at Dublin.

Wilkinson, Ian F., and Louise C. Young. 1994. Business Dancing: The Nature and Role of Interfirm Relations in Business Strategy. *Asia-Australia Marketing Journal* 2 (1):67-79.