



# SME Network Taxonomy: A Qualitative Study of Network Practice in the EU

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## ABSTRACT

*The organizing of resources and inter-firm collaboration according to a network paradigm is highly emergent. This paper presents the results of an investigation aimed at describing a generic taxonomy of network practice among European Small and Medium-sized Enterprises (SME's). From data collected through a pan-European two-folded investigation enveloping 49 interview- and 121 questionnaire-respondents, three generic network profiles are identified ("Supply-chain Co-operative networks" (SCN), "R&D Cooperative Networks" (RCN) and "Business Co-operative Networks" (BCN)).*

## 1. INTRODUCTION

With the emergence of a new way of organizing and perhaps foremost *conceptualizing* the enterprise, the notions of network organizations become relevant for further study and investigation. On the basis of this, the purpose of this paper is to investigate and describe a generic taxonomy of network practice among European small and medium-sized enterprises (SME's). We have achieved this through a Pan-European investigation of industry-practice.

This paper covers a brief introduction to the concept of network organizing, the methodologies employed in this research, analysis of the findings, and a discussion and conclusions.

### 1.1. Background

*Network analysis corrects a tendency in organizational theory to focus on the trees rather than the forest, on the actions of individual organizations rather than on the organization of their actions.*

(Salancik, 1995, p.345)

The emergence of a network-based view of the firm has been eminent since the early 80's (Black & Edwards, 2000). With work by scholars such as Henry Mintzberg (Ad-hocracy) (Mintzberg, 1983) and Charles Handy (Virtual organization) (Handy, 1995), the subject of an organizational form with an increased internal dynamic has been contemplated through what appears to be an endless stream of scientific articles.

With a steady growing theoretical foundation for the application of network theory in organizational theory, we now begin to see the emergence of a network paradigm (Black & Edwards, 2000; Cravens, Shipp & Cravens, 1994; Cravens, Piercy & Shipp, 1996; Gulati, 1998; Handy, 1995; Möller & Halinen, 1999; Chase, 1998), or in the words of John Sculley,

*The network is the paradigm, not the catholic church or the military.*

(Cravens, Shipp & Cravens, 1994, p. 19)

## 2. RESEARCH METHODOLOGY

The research methodology comprised of two parallel investigations gathering empirical data from practitioners involved in or having been involved in co-operative networks.

In a series of semi-structured interviews with a total of 49 individuals considered as experts within the networking field, a wide range of cases (19) describing network practice in Europe were collected. The selection of respondents was based on criteria stating that the individual had to be employed by an enterprise involved in explicit networking. Networking was defined as the co-operation of separate juridical entities with a clearly stated purpose for the co-operation. Furthermore the individual at hand had to have had substantial insight into the management of the said co-operation.

Having identified individuals fitting these criteria they (the individuals) were contacted by local representatives. They were asked to participate in a one hour interview with the purpose of describing a network that the enterprise was or had been part of.

The documentation of the 49 interviews resulted in 19 case-descriptions of current European network-practice among SME's.

Parallel to this, a questionnaire consisting of 21 questions ranging from multiple-choice to open questions was distributed to a total of 121 respondents (fitting the same criteria as for the interviews).

Due to local differences in conducting the survey, the total population is unknown, whereby the response-rate of the investigation is impossible to calculate. The final number of responses were 121.

The data from the interviews was qualitatively analyzed as case-descriptions by investigators at the University of Gothenburg in accordance with the previously stated purpose of the investigation. A generic taxonomy of the cases was created and complemented by a statistical analysis of the data.

## 3. RESULTS

### 3.1. Co-operative network profiles

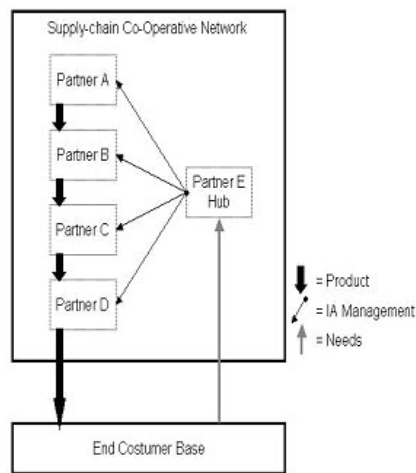
The co-operative network profiles where differentiated by degree of Intellectual Asset integration. Intellectual Asset integration is defined as the degree of actively sharing of intellectual assets across organizational legal boundaries within the co-operative network. This is not to be confused with having and using valuable Intellectual Assets in-house. Our identified co-operative network profiles have a range of Intellectual Asset integration ranging from high to low.

### 3.2. Profile 1: Supply-chain Co-operative Network

#### 3.2.1. General Structure

The Supply-chain Co-operative Network, SCN, is comprised of a set of companies whose main motivation for participating in the net-

**Figure 1.** Visualization of a Supply-Chain Co-operative Network  
3.2.2. Management



work are cost reduction related activities. This is achieved by a strong focus on optimizing the interfaces between the participating companies. An SCN is comprised of partners in vertical collaboration, and the network is a modern supply-chain with the ability to quickly set up and execute a product- or service-refinement and -distribution.

The difference between an SCN and a traditional supply-chain is the special attention that the company interfaces are given. In addition to this, there is also a general understanding of the whole chain, often expressed through an explicit common goal. Companies in traditional supply-chains tend to focus on the individual tasks at hand and show less interest in the overview of the supply-chain. The overview and understanding of the whole chain gives the SCN-Hub a substantial advantage compared to a traditional supply-chain when something goes wrong in the product flow. By understanding the complete process, the SCN can take appropriate action immediately and minimize problems along the product line.

### 3.2.1. Intellectual Assets

The SCN Intellectual Asset approach strictly focuses on product relevant Intellectual Assets. What does each company need to know and do in order for the supply-chain to run smoothly? What information is required in order to place the partners after each other in the chain? What implications does a partner's change-in-procedure cause up or down the line? Intellectual Assets collaboration is fairly limited. However, it is important for each partner to have the ability to identify and describe his Intellectual Assets and product, in order for the SCN-management to respond successfully to external events.

#### 3.2.2.1. Purpose & focus

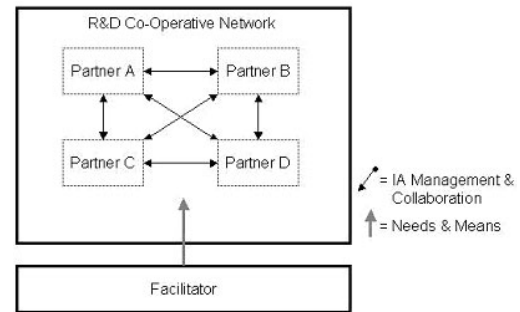
The general management practice can be described as a management aimed at optimizing the processes in the supply chain through a high degree of managerial control. Given the nature of the network as encompassing a distribution of the processes geographically and culturally, there is also a focus on creating a good communicative culture. This communicative culture is not a means in itself, but clearly functionalistic, which is highlighted by the communication often focusing exclusively on the product or the orders involved in the process at hand.

## 3.3. Profile 2: R&D Co-operative Network

### 3.3.1. General Structure

The R&D Co-operative network, RCN, is comprised of a set of companies whose main motivation for participating in a co-operative network is research and innovation. This is mainly conducted through

**Figure 2.** Visualization of a R&D Co-operative Network



horizontal collaboration between partners, each contributing unique Intellectual Assets to the network. With the main motivation for the individual partner being personal Intellectual Assets creation, the synergic effects of the network are of great importance for whether or not the RCN's existence is justified or not.

### 3.3.1.1. Intellectual Assets

The RCN Intellectual Asset approach focuses on the cross fertilization of existing IA into new. In order for the RCN to be a successful network, it has to be able to take advantage of the synergic effects attained from having experts from several fields in close collaboration. For this to take place, the transparency of the Intellectual Assets in the network must be high.

## 3.3.2. Management

### 3.3.2.1. Purpose & focus

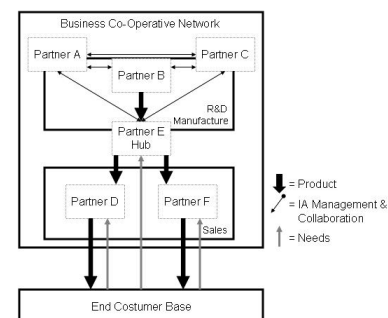
The main activity of the network management in the RCN is the creation of an environment where knowledge can be cross-fertilized and grow and where the individual contributions of the partners Intellectual Assets can be surpassed by the joint output of the network.

## 3.4. Profile 3: Business Co-operative Network

### 3.4.1. General Structure

The Business co-operative network, BCN, is comprised of a set of companies whose main motivation for participating in a co-operative network is directly related to an increase in sales or acquisition of load. A BCN provides a product or service produced by a set of partners, and this product or service is then sold by another set of partners in the network. A BCN usually has a strong hub-company who is the product-

**Figure 3.** Visualization of a Business Co-operative Network.



or service-owner, and the main source of value-creation lies in the dynamic structure of the BCN and its ability to adapt to ever-changing market conditions. The BCN comprise of partners in horizontal (and to a lesser extent vertical) collaboration.

#### 3.4.1.1. Intellectual Assets

The BCN Intellectual Asset approach focuses on a high degree of collaboration between the partners. Existing in a highly turbulent environment (acting on a turbulent market), the notion of a flexible partner-constellation is of major importance. This is further complemented by the need for a high level of partner transparency in order for the network manager to ascertain the optimal constellation of partners for the said objective. It is in other words necessary for the network manager to have a good understanding of the relevant Intellectual Assets of the partners in order to co-ordinate the constellation.

#### 3.4.2. Management

##### 3.4.2.1. Purpose & focus

The network management of the BCN involves a strong focus on creating an effective communicative environment that facilitates the communication of customer demands to the production/development and vice-versa. This is implemented through a culture of mutual understanding that spurs the problem solving of the identified problems in an efficient manner.

## 4. DISCUSSION

This paper has succeeded in identifying three generic profiles for organizational networks. In doing so, we have strived to take a first step towards facilitating the stipulation of design-criteria for ICT-support of network-management. At the present this research encompasses investigating the architectural implications of the three proposed profiles, and it is our ambition that this will provide the fundamental bases for the design of ICT-artifacts for the network-organization.

## 5. CONCLUSIONS

The networks that we have investigated can be categorized into a network taxonomy consisting of three ideal-states of networks, namely Supply-chain Co-operative Networks (SCN), R&D Co-operative Networks (RCN) and Business Co-operative Networks (BCN).

These three forms of networks differ from each other on a number of premises, but the most significant of these is the fact that the first two (SCN and RCN) are a result of previously existing relationships between enterprises stemming from either a supply-chain relationship or an R&D relationship. These relationships have been further augmented by an increase in supporting ICT and an enhancement of the co-operation's efficiency.

The third network-type (BCN) is contrary to this a new construction stemming from a spotting of opportunity by a prospective hub-enterprise that creates a network constellation by attracting partners.

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## REFERENCES

- Black & Edwards. 2000. Emergence of virtual network organizations: fad or feature. *Journal of Organizational Change Management* **13**(6): 567-576.
- Chase, R.L. 1998. Creating knowledge management business strategies. UK. *Management trends international*.
- Cravens, D.W. Piercy, N.F & Shipp, S.H. 1996. New organizational forms for competing in highly dynamic environments: The network paradigm. *British journal of management* **7**: 203-218.
- Cravens, D.W., Shipp, S.H. & Cravens, K.S. 1994. Reforming the traditional organization: the mandate for developing networks. *Business horizon*, July-August, 19-28.
- Gulati, R. 1998. Alliances and networks. *Strategic management journal* **19**: 293-317.
- Handy, C. 1995. The virtual organization. In Pugh, D.S. (Ed.) 1997. *Organizational theory: selected readings*. London, Penguin Business.
- Mintzberg. 1983. *Structure in fives: designing effective organizations*. Englewood-Cliffs. Prentice-Hall.
- Möller, K.K. & Halinen, A. 1999. Business relationships and networks: Managerial challenge of Network Era. *Industrial marketing management*, **28**:413-427.
- Salancik, G.R. 1995. WANTED: A good network theory of network organization. *Administrative Science Quarterly*. **40**: 345-49.

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