
Network performance management in interaction with network companies: introduction

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Biographical notes: Adrian Plüss works in formation, applied research and development, continuing education and service in the field of business network and knowledge management. He lectures in knowledge management and business network at the University of Applied Sciences Northwestern Switzerland. He is a Natural Scientist and received his PhD at the Federal Institute of technology in Zurich, ETHZ at the Department of Civil Engineering. He is a network coach and auditor of the Virtuellefabrik Nordwestschweiz/Mittelland. He is the Chair of Master Program in Business- and Process Management.

1 Introduction: why network performance?

In both literature and practice, there is common agreement about the increasing importance of company networks and cooperation strategies (*coopetition means cooperation and competition*). It is evident that only positive cost-benefit ratios will keep individual companies in the network. At the same time, the management of the network has to make sure that every member company makes a certain contribution to the development and growth of the network. For these purposes, it is necessary to measure any kind of network performance into concrete numbers, which are measurable.

As found in the literature research, controlling within network organisations is a relatively new subject and not many researches are done in this field yet. The emergence of new forms of hybrid competition that includes competition and cooperation drives the need for strategic alliances. The ability to create and manage relationships with a network of collaborators is very important winning the battle in more and more competitive markets (Huber et al., 2005). An emerging view of strategic alliances, namely the 'relational view', posits that strategic resources could cross the boundaries of companies and reside in relationships between firms (Dyer and Singh, 1998). According to this view, the unit of analysis moves from the industry ('industry structure view') and the firm ('resource-based view') to the network of firms. These relationships can be regarded as a new form of sustainable competitive advantage. By pooling together different resource endowments, each network partner is able to bundle services and products in an integrated package for their customers. By doing so, they will be able to satisfy their customers' needs with a 'one stop shop solution'.

Plüss et al. (2005) show in their study the development and implementation of a *Network Controlling System*, in cooperation with the *Virtuelle Fabrik Nordwestschweiz/Mittelland*, a virtual enterprise with 21 companies in the field of mechatronics in the north-western region of Switzerland. The business network is a linking together of companies for the purpose of entering new markets or realising concrete projects that for the individual companies alone would be unprofitable. Nowadays, the source network offers a broad spectrum of products and services and is more attractive for customers than the individual SME (Collins et al., 2004; Plüss and Huber, 2003).

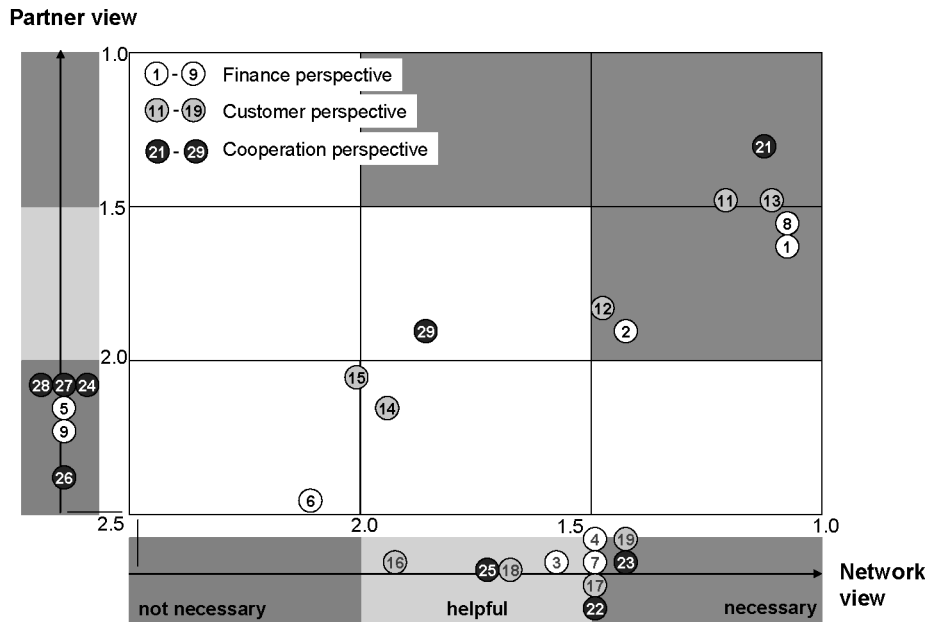
Since the foundation of the network eight years ago *performance measurement* or any kind of controlling activities was not regarded as a key issue – other challenges were given a higher priority. Nowadays, both partner companies and the management of business network are more and more interested in seeing network performance reflected in concrete figures. The members of the network want the existence of a win–win situation for all network participants. This means that a network company will stay as long in the network as it believes that the individual recognised benefits will surpass the individual recognised costs. At the same time, the network organisation has to make sure that every member company makes a certain contribution to the development and growth of the network.

The development and implementation of a network controlling system showed some interesting results:

- Not all of the costs and benefits resulting of network activities are measurable only in financial dimensions. As shown in the Balanced Scorecard Methodology (Kaplan and Norton, 1997), many business activities have just an indirect impact on future financials figures. Cause-action analyses are necessary to identify such indirect performance drivers.
- It is important to consider on the one hand the view of each single partner company and on the other hand the perspective of the entire network represented by the network partner companies.
- Allow different heterogeneous dimensions. In our network scorecard introduced the measure of performance had three different perspectives: finance perspective, customer perspective and cooperation perspective.
- To ensure a later implementation and handling of the measures, limit the amount of performance indicators for each to make sure the model's complexity is reasonable.
- Define criteria, whether a single performance indicator is elected for the network scorecard or not (e.g. high commitment of both partners and management of the business network).

Figure 1 shows a correlation between the finance perspective, customer perspective and cooperation perspective with – on one side the partner's view and on the other side the network's view. The findings show a strong interest for the *finance and customer* perspective, while the *cooperation* perspective was less important as seen by the partner. This is not surprising because the finance and customer perspective are very important, also for the network performance. On the other hand, a network does not work without any cooperation of the partners so the result was rather surprising our research team.

Figure 1 Correlation between three different perspectives, with a partner’s view on the one hand and a network view on the other hand. The numbers of measures have been elaborated by interviewing each partner company and the network management



Source: Plüss et al. (2005). For the measures see Table 1.

Compared to the measures of a controlling system in a company, there are additional network-specific measures necessary for a Network Controlling System. The network scorecard supports both the management of the network and each single partner company with valuable information about the implementation success of the network goals. The new performance transparency will create a ‘reasonable pressure’ for all the member companies but also for the management of the Virtual Factory. It is now easier to identify valuable partners and to judge about the effectiveness and efficiency of the network management.

The papers studied in this Special Issue are as follows:

The paper ‘Accounting for networks: the consolidated network approach’ discusses the applicability of the consolidated financial statement as a tool for managing network profitability. This idea of the consolidated network is presented on the basis of a conceptual analysis, derived from action research in two company networks. This paper shows that in the network economy, a profitability analysis based on the figures of one company is not sufficient to obtain an insight into the competitiveness of the whole network. The companies focusing narrowly on their core business have lost direct authority and much knowledge. *The consolidated network* may be one way to regain lost power. Recently, the value added to the customer has been emphasised in the strategies of these companies. The company’s own profitability can be guaranteed by offering something that is of concrete value to the customer. Thus, the companies are willing to take care of, not only their own profitability but also the profitability of the customer, as well.

The paper ‘Financial statement analysis of a network of SMEs: towards measurement of network performance’ presents the financial statement analysis of the network of Small- and Medium-sized Enterprises (SMEs). The primary objective is to make an approach towards a systematic Network Financial Statement Analysis (NFSA). The network is regarded as a virtual entity physically consisted of the resources allocated by the partner firms for the use of the network. The NFSA is focused on eight measurement objects that are causally related to form a strategic map: resources, growth, concentration, productivity, profitability, mutual flows, risk and value. Several measures for each object are suggested. The NFSA is illustrated by a case of a leader-driven network of SMEs. The study is a part of a multi-disciplinary research project on the performance measurement system for SME networks. The study presents a good way to estimate financial statements for small business networks considered as a virtual system.

Table 1 Identified measures with corresponding to each perspective

<i>Measures for different perspectives</i>		
<i>Financial perspective</i>	<i>Customer perspective</i>	<i>Cooperation perspective</i>
1 External sales/R	11 Number of new clients	21 Satisfaction index of network partners
2 Internal sales	12 Number of network quotes	22 Number of public network events
3 Network revenues	13 Number of realised projects	23 Number of common research and innovation projects
4 Network expenses	14 Number of new leads generated	24 Average membership duration
5 Realised savings	15 Number of qualified leads generated	25 Average number of partners per project
6 Average sales per project	16 Number of trade papers and publications	26 Number of complaints reported to the board
7 Costs for broker	17 Number of customer inquiries for network	27 Number of active network event participation
8 Sales generation for broker	18 Marketing and promotion expenses	28 Network database utilisation
9 Sponsoring income	19 Number of reference projects	29 Number of working days contributed to work-packages

Note: The numbers are corresponding to Figure 1.

The paper ‘Knowledge management with focus on the innovation process of collaborative networking companies’ shows one of the soft factors in network collaboration, because knowledge is difficult to measure. Company’s ability to create, store and transfer knowledge about technologies, customer needs and the innovation process itself may well determine success in bringing new products or services to the market. Yet, little is known how companies treat these issues in networking practice. With the aim of assessing and performing current practices in innovation-oriented knowledge management at four Swiss technology-based global acting companies, a tool for collecting and consolidating data along the innovation process was developed.

Furthermore, a network-specific analysis with customer, supplier, etc. shows a great potential inside and outside the companies by performing the explicit and tacit knowledge, as well as the intensity of knowledge creation and transfer.

The study 'Performance measurement of networks: towards a non-financial approach' examines the performance measurement of business networks. Performance measurement in networks should provide companies with – analogously to an individual company – relevant information concerning the drivers of financial performance. This paper has two objectives. The first aim is to empirically determine how inter-organisational cooperation is managed using performance measurement in Finland. The second aim is to discuss and illustrate how the non-financial performance of networks could be approached on the level of individual measures from the overall network management point of view. This paper also makes a contribution by providing empirical evidence about network measurement in Finnish companies. In addition, it presents a practical example on how the non-financial performance of networks could be approached on the level of individual measures from the overall network management point of view.

In the paper 'Quantifying and setting off network performance', a model for quantifying and setting off network performance is developed. At the end, the network performance can be translated by transfer payments between the collaborating actors into shareholder value. This paper shows the problem with current performance metrics and the need for network performance measures and is discussing special aspects of shareholder value applications in networks. It also describes the direct and the ceteris paribus approach, deriving the shareholder value in networks. This paper combines issues that have been separately considered in the network/supply chain management and value-based management literature. It broadens both literature schools by studying 'quantitative' performance measurement opportunities in network environments. Further, it provides practical insights into the network performance management and gives executives evidence to gain the merits of network approaches such as the supply chain management concept.

The aim of the paper 'Virtual enterprise and e-business: a case study in a Brazilian aircraft company' is to investigate the use of Virtual Organisation (VO) and Virtual Enterprise (VE) conceptions in the most important Brazilian Aircraft Company – Embraer, and to analyse the main impacts of these conceptions on its competitiveness power. The methodological framework is based on a unique case study supported by data collection techniques involving some strategic departments of the Brazilian aircraft company, especially R&D, engineering, Supply Chain Management (SCM) and Customer Relationship Management (CRM) areas. The work also tries to identify some technical and organisational obstacles and solutions concerning the implementation and development of the VO and VE concepts in this case.

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