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# **Chain Management: All about Success**

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**Paper prepared for presentation at the 110<sup>th</sup> EAAE Seminar ‘System Dynamics and  
Innovation in Food Networks’ Innsbruck-Igls, Austria  
February 18-22, 2008**

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## Chain Management: All about Success

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### Abstract

Nowadays food products are produced in vertically collaborating networks. The questions of how such chain networks have to be designed and which governance structure fits best have been addressed in several well known articles. However, questions dealing with chain strategy and management are not discussed satisfyingly. Neither is the understanding of what is success of chain management distinguished.

**Keywords:** *Chain management, Network goals, Success*

### 1. Introduction

Since the beginning of food processing the product flow has not been changed substantially. However, this is certainly not true for food products themselves. Instead of an inspection and experience good, today food is perceived as a complex bundle of inspection, experience, and credence characteristics. In Western Europe and the US, this development has been catalysed by different circumstances including food crises, the demand for organic food and consequent traceability requirements. Additionally, the contemporary discussion on labelling of GMO adds to the complexity of modern food products.

Comprising, the requirements of food products have led to the demand of a transparent production chain. Thus, this has led to a high demand for availability of information making information a competitive must. Nevertheless, in order to get a competitive advantage, these information requirements have to be transformed into knowledge creating an inimitable and non-substitutable asset. In favour of these aspects, the food chain is in the progress to be re-designed into vertically coordinated organisations. These organisations that contain various firms and that are sequentially connected can be called supply chain networks.

The questions of how such chain networks have to be designed and which governance structure fits best have been addressed in several well known articles (GULATI ET AL., 2000; HENDRIKSE, 2003; OMTA ET AL., 2001; LAZZARINI ET AL., 2001). However, questions dealing with chain strategy and management are not discussed satisfyingly. Neither is the understanding of what is success of supply chain networks distinguished. Therefore, the aim of this paper is not to improve the discussion of the government of chain networks. Instead, we want to enhance the discussion on the successful coordination of vertical network, i.e. successful chain management.

In this context, we will first outline the concepts of networks and supply chain networks. Adjacent, we will elaborate on the issues of a chain management and its success. And finally, we will draw some conclusions.

## 2 . The Conceptualisation of Supply Chain Networks

Traditionally economics discussed two forms of business transactions. One was through (spot) market transactions and the other was by vertical integration. Nevertheless, institutional economics introduced different approaches in the form of hybrid organisational concepts. Hybrid forms are the systematic optimisation of activities through inter-firm coordination and cooperation. In general, market transactions are perceived to be unable to pool capabilities and resources of different economic actors while with vertical integration the flexibility and market incentives are lost (ILIOPOULOS, 2003). In the following sections we will concentrate on one specific form of hybrid – the network approach.

### 2.1 Networks

Network is a term, widely spread in sociology and management sciences. This term covers all arrangements defining recurrent contractual ties among autonomous entities (MENARD, 2002). Generally, networks can be defined as “specific properties of the transaction relationships, typified by relational relationships in which formal and informal sharing and trust building mechanisms are crucial” (ZYLBERSZTAJN AND FARINA, 2003). Networks do not solely address vertically organised ties. They rather more generally cover all questions on inter-organisational relationships of more than two firms (LAZZARINI ET AL., 2001).

In network science the collaboration is determined by different forces e.g. complementary abilities of the involved firms and risk reduction (MENARD, 2002). While traditionally the resource-based view of the firm focused on the intra-firm creation of core competencies as a competitive advantage (BARNEY, 1991; PRAHALAD AND HAMEL, 1990), GULATI ET AL. (2000) amplified it in such a way that inter-firm networks can be seen as an origin of inimitable resources creating inimitable and non-substitutable value. By a comparison of a multiunit organisation with a network, TSAI (2000) showed that units rich in social capital and strategic relatedness are more likely to realise potential synergies in related business operations. Organisations are more capable to ascertain and utilise new opportunities and to react accurately to the potential change of internal and external environment as well as strategic and tactical actions (WIKLUND AND SHEPHERD, 2003). Especially, the transfer and creation of explicit and implicit knowledge within the network by cooperation permits the network to be more competitive. Mainly organisational knowledge gains in importance as it has the ability to serve as a source of sustainable differentiation and is inherently difficult to imitate. By formal and informal knowledge (e.g. routines), contractual rules can be substituted lowering transaction costs and information asymmetries. In an environment where the survival of organisations depends on the ability to be innovative (HAYEK, 1949), the firm's success is determined by its dynamic capabilities, i.e. the ability to integrate, build and reconfigure internal and external resources and competencies (TEECE ET AL., 1997). Particularly, for product innovations a coordination of knowledge between the different ties of a chain network might enhance the chance creating a successful new product. Within networks, firms are embedded in upstream and downstream flows of resources, information, and knowledge. Hence, networks can influence the nature of competition and the profitability beyond traditional measures of industry competition (GULATI ET AL., 2000).

By focusing on core competencies, a single company is able to capture the returns of applying economies of learning, scale and scope on one hand. On the other hand, this firm faces the high risk of specialised production orientation. By collaboration, specialised firms are able to share their strengths to create a more competitive entity and simultaneously reduce firm individual

risks as well as to increase sales and revenues (ARBEITSKREIS, 1995). Besides such financial incentives, also non-pecuniary incentives like knowledge generation, power, and trust are key concepts in the network theory that motivate economic actors to work together (UZZI, 1997). The role the single firm plays within the network is determined by its power, its competencies, its interests, existing rules, and the aim of the network (OMTA ET AL., 2001). Through mutual dependency of assets developed within networks, companies can secure the investments they have made to sustain the network (MENARD, 2002). This means that both parties have an interest in a true partnership. A true partnership implies that common values exist based on loyalty and trustworthiness within a network. However, there are also some constraints in networks: divergent aims of the actors, information asymmetries, partitioning of gains and losses, opportunistic behaviour, etc. (ARBEITSKREIS, 1995). To overcome the constraints and to achieve the gains, collaboration ought to have shared values, trustworthiness, as well as shared knowledge and a shared strategy (HANF AND KÜHL, 2003).

A more differentiated approach to networks is taken by BURR (1999) who classifies four network typologies. They are namely the spontaneous network, self-organising network, project-orientated network, and strategic network. This typology is derived from the intensity of relations, the coordination mechanism, and the existence of a broker. In the subsequent thoughts we will focus on strategic networks. In such a pyramidal-hierarchical network, a strategy-leading focal company is the core element of the network being either manufacturer or retailer. The focal firm is expected to manage the system in order to realise the strategic objectives.

## 2.2 *Supply chain networks*

As shown, networks could be used for the organisation of horizontal and vertical cooperation. However, nowadays in the agri-food business vertical linkages are relevant in order to satisfy the consumer requirements. Therefore, an explicit vertical form of networks is introduced in this paper. Under a supply chain network we understand the joint and cooperative behaviour and actions of companies that are related by vertical product and information flows in the supply chain in order to provide a product or service to the end consumer. The objective of most of the supply chain networks is to produce higher quality and/or higher efficiency by cooperation rather than by full integration of the supply chain or by market transactions (HANF AND KÜHL, 2002, LAZZARINI ET AL., 2001; NEVES 2003; ZYLBERSZTAJN AND FARINA, 2003). Within such pyramidal-hierarchic strategic networks (GULATI ET AL., 2000; JARILLO, 1988; WILDEMANN, 1997) the focal company or chain captain is liable with its reputation for each product being produced by its supply chain network (SCN). The increasing importance of reputation or brand image can be observed for example by the retailer's efforts to create a brand for their own company (HANF AND HANF, 2003). Since the chain captain is liable without limitation for the correctness of the production i.e. for all credence characteristics, he must avoid any type of defect within the entire network.

Hence, the focal company has to set incentives to create a situation, in which every actor has self-interest to secure the sustainable stability of the whole network (PICOT ET AL., 2001). On one hand, these incentives must be of monetary nature to create a short-term win-win situation (i.e. higher profits). On the other hand, the incentives have to be of non-pecuniary nature to create a long-lasting "unique relationship proposition", which cannot be imitated easily by competitors. Exclusive benefits can include higher profits or joint growth in the future. Nevertheless, for some participants of the network this might be just to stay in business. The cooperation in SCN relies on confidence and understanding. These characteristics have to grow over a long time and create the space to achieve a superior joint solution of a problem (HANF AND KÜHL, 2003).

Especially in the food business, where numerous SME are active, cooperative networks give those enterprises the chance to concentrate on their core competencies. By cooperating, SME can better exploit their core competencies and reduce at the same time the inherent risk by focussing on single activities. Because of this structure, the focal company has to consider that such companies do not dispose of a sophisticated IT-infrastructure and high manpower. Additionally, single SME do not dispose of a sufficient quantity of commodities in order to supply the whole demand of the network. Particularly for agricultural goods, the total amount of supply needed has to be delivered by various farmers. For this reason, horizontal cooperation has to be installed being managed by the focal company itself or by a system supplier.

### 3. Strategic chain management

Food supply chains consist of a number of consecutive stages and at each stage of one or more independent firms so that the material and information flows have to be coordinated as to timing, quantity, quality and other aspects. On account of this, vertical cooperation between firms requires a great deal of coordination among them. Though in the organisational theory cooperation and coordination are both attributed to integration, GULATI ET AL. (2005) stress that there are distinct differences between them. We will explain subsequently these differences and their implications in detail.

In the context of SCN, cooperation refers to the alignment of interests. Thus, problems of cooperation accrue from conflicts of interests (GULATI ET AL., 2005). These conflicts arise because self-interested individuals optimise their own private benefits before they strive for collectively beneficial outcomes. GULATI ET AL. (2005) conclude that the problem of cooperation can be regarded as a problem of motivation. To overcome this problem, formal and informal mechanisms can be used. Formal mechanisms include: contracting, common ownership of assets, monitoring and sanctions, and prospect of future interactions. Informal mechanisms are identification and embeddedness (GULATI, 1995).

Coordination can be understood as the alignment of actions. Coordination problems arise if actors are not aware that their actions are interdependent. In general, interdependency is created when decisions and actions by one partner influence the decisions and actions of partnering firms (THEUVSEN, 2004). There are three types of interdependencies: i) horizontal or pooled interdependencies between firms competing in the same market, ii) vertical interdependencies between firms operating in different markets but linked by sequential work flows where the output of one is the input of the other, and iii) symbiotic or reciprocal interdependencies between firms that complement each other or have reciprocal product and/or information flows (ASTLEY AND FOMBRUN, 1983; LAZZARINI ET AL., 2001). Another reason for coordination problems is the uncertainty about others' rationality so that one does not know how the others will act. Thus, problems of coordination are results of the lack of shared and accurate knowledge about the decision rules that others are likely to use and how one's own actions are interdependent with those of the others (GULATI ET AL., 2005). Again, there are formal and informal mechanisms to overcome coordination problems. Formal mechanisms can be derived from the literature on intra-organizational coordination (MARCH AND SIMON, 1958; THOMPSON, 1967). They include programming, hierarchy, and feedback. In order to enhance the predictability of the others' actions, schedules and standards are installed. Such *ex ante* agreements can be regarded as programming. A stronger way to enhance predictability is to introduce hierarchal elements, such as single sources of authority and centralised decision making. Integrating feedback processes helps to enable mutual adjustment on an ongoing basis (THOMPSON, 1967). Informal mechanisms to overcome the constraints of coordination are leadership, norms, culture, shared values

and experience, trustworthiness, and a shared strategy (HANF AND KÜHL, 2005).

GULATI ET AL. (2005) deduce that even though cooperation may be achieved, i.e. the interests of the individual actors are aligned, the coordination problems may persist. Thus, both, the alignment of interests as well as the alignment of actions have to be simultaneously achieved in order to create a successful partnership. For this, collective strategies must be implemented by chain actors. The management literature on (intra-firm) coordination usually distinguishes between two types of strategies – corporate and business strategies. This distinction is not sufficient for an adequate consideration of the multiple linkages which exist between interdependent organisations within a chain network (BRESSER AND HARL, 1986). Thus, various authors have introduced the concept of collective strategies<sup>1</sup> (ASTLEY, 1984; CARNEY, 1987) regarded as instruments dealing with the variation in the inter-organisational environment. So they aim to stabilise and dominate the interdependent task environment (BRESSER AND HARL, 1986). In this context, collective strategies can be re-active, absorbing variation within an environment, or they can be pro-active forestalling unpredictable behaviour by other organisations (ASTLEY AND FOMBRUN, 1983).

Another reason to implement collective strategies is to overcome coordination difficulties arising from interdependencies among the firms. In order to use collective strategies to overcome coordination problems, the focal company (as the centralised decision making unit in pyramidal-hierarchical strategic networks) has to consider three different types of interdependencies. LAZZARINI ET AL. (2001) provide the advice to exert managerial discretion for sequential (vertical) interdependencies; to achieve process standardisation – for pooled interdependencies; and to maintain coordination through mutual adjustments – for reciprocal interdependencies.

The cooperation problem of aligning of the interests of individual partners in supply chain networks is addressed by partnering strategies. Partnering is a term that addresses issues which are associated with the design of relationships within a supply chain. Partnerships exhibit a certain degree of continuity and the focus of the relationships goes beyond price (MENTZER ET AL., 2000). Considering supply chain networks and the heterogeneity of their member firms, it can be expected that an optimal mode of partnerships widely varies along the whole chain. Thus, the focal company has to work out how the partnerships should be designed. WEBSTER (1992) proposed a continuum from independent partnerships to strategic partnerships. In our paper, we use the typology of MENTZER ET AL. (2000) dividing partnering into strategic and operational. Specifically, they define strategic partnering as an “on-going, long-term, inter-firm relationship for achieving strategic goals, which deliver value to customers and profitability to partners” (MENTZER ET AL., 2000). The aim of strategic partnering is to improve or dramatically alter a company’s competitive position through the development of new products, technologies and markets (WEBSTER, 1992). Additionally, strategic partnering should also include exclusivity and non-imitability (MENTZER ET AL., 2000). Operational partnering is defined as a “needed, short-term relationship for obtaining parity with competitors” (MENTZER ET AL., 2000). Thus, an operational partnering strategy seeks to improve operational efficiency and effectiveness. Such strategic orientation involves shorter time spans and less organisational resources. Therefore, operational partnership is much easier to implement and also to reverse than strategic partnership (MENTZER ET AL., 2000).

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1. In general, collective strategies are defined as systematic approaches by collaborating organizations that are jointly developed and implemented (ASTLEY AND FOMBRUN, 1983; ASTLEY, 1984; BRESSER, 1989; BRESSER AND HARL, 1986; CARNEY, 1987; EDSTRÖM ET AL., 1984; SJURTS, 2000). However, in the context of strategic networks we consider the focal company as taking the lead.

As shown by GULATI ET AL. (2005), cooperation and coordination are two sides of the same coin. Based on this, we believe that both aspects have to be integrated in chain management concepts. Additionally, DUYSTERS ET AL. (2004) have shown that collaborations have to be analysed on three different levels in the context of chain management: firm, dyadic, and network levels. Analyses at the firm level reveal that successful cooperation intensively employs managerial constructs known from single firms, e.g. alliance database, joint business planning, and alliance managers. At the dyadic level, the design of governance structure has a significant impact on performance. Further on, at this level, trust and commitment play a particular role for the success of coordination. Studies at the network level emphasise the role of social capital to enhance information exchange resulting in information advantages (UZZI AND GILLESPIE, 2002). Furthermore, network performance is related to current ties and ties with potential partners.

#### **4. What is the successful chain management?**

Generally, the success of any kind of activity can be understood as the achievement of the goals set. However, with regard to chain management the tractability of success is still undetermined because its goals remain unsystemised. The strand of scientific literature on chain management is spattered by numerous representations of chain management goals. Nonetheless, there are no studies that deal with the common bundle of hypotheses aiming, thus, to prove the findings of other authors (see FETTKE, 2007 for a review). Therefore, for theoretical and empirical use there is a need to systematically elaborate on success of chain management.

On account of this, the first question to be answered is whether the success of chain management exists at all. In general, chain management is aimed at the coordination of relationships within SCN. But does it address the success of the whole SCN? Since SCN are based on formal and informal contracts between numerous actors, they represent a set of purposeful relationships and arrangements. This is supported by the implementation of collective strategies aiming to achieve the inter-firm goals. Supposedly, these goals can be achieved and, therefore, the success of chain management can really exist. On the other hand, networks are formed by connections between single firms. This implies that chain management can bring about success to the members of an SCN but it can remain unsuccessful as to satisfaction of the overall network goals. Thus, a conflict can appear regarding the achievement of goals of different network levels, e.g. between firm and network levels. In this context, another question arises with regard to what the goals of chain management are and where they come from. Without the clarification of these goals and their origin, the understanding of what is successful chain management can be hard to achieve.

The literature on strategic management suggests that the desired goals and objectives can be achieved based on a strategy as a long-term plan of actions. In terms of SCN, the above chapters introduce collective strategies defined as “systematic approaches by collaborating organisations that are jointly developed and implemented” (BRESSER AND HARL, 1986). On the other hand, supply chain networks possess a focal firm coordinating the network in a hierarchical style. Despite the persistence of mutual dependencies between the network members, the other network actors are more or less heavily dependent on the focal company because of (long-lasting) explicit or implicit contracts. The level of such dependency is usually higher for vertical than for horizontal ties (WILDEMANN, 1997). Given the verticalisation conditions, the focal company is, thus, able to exert power over the other network companies. Therefore, in our opinion, a collective strategy has to be regarded as a systematic approach that addresses the – by the focal company induced – alignment of actions and interests of independent but collaborating companies in order to achieve certain goals. Based on this, the setting of the overall network goals is in most cases the prerogative of the focal company. Due to this fact, it might be often difficult to distin-



guish between the network level goals and the firm level goals (e.g. consumer satisfaction can be regarded as either a firm level aim of a retailer or a network level aim as its fulfilment involves many firms but it is addressed by retailer being a focal actor). Because a network consists of different network levels, we assume that there are not only network-related goals but at least firm-related goals that have to be met by chain management. Under network-related goals we understand goals set within a network that can only be met if all networked firms are jointly working to achieve them. An example is to enhance the total chain quality or to prevent a law as it was the case of the creation of the German Q&S-System. In general, we suppose that such aims are rather of non-pecuniary or intangible nature. This is another reason why their indication is complicated in terms of SCN. Firm-related goals refer to goals that single firms want to achieve for their own firm entering the network. Examples might be higher sales, risk reduction, higher profits, or knowledge generation. As seen, the goals of chain management have to be considered at all (or at least at two) network levels (Table 1). Therefore, the success of an SCN can be regarded as the simultaneous achievement of network-related goals and goals of (as many as possible) network members.

**Table 1.** Chain management goals

Goals	Network levels		
	Firm level	Dyadic level	Network level
Examples of cooperation sub-goals	Knowledge generation	Avoidance of opportunism Gaining or distribution of power Trustful relationships	Chain transparency Trustful relationships
Examples of coordination sub-goals	Increase in sales Risk reduction Consumer satisfaction	Access to information Customer satisfaction	Chain quality Consumer satisfaction

Source: Own representation

Considering the approach of HANF AND HANF (2007) who distinguished between operative and strategic chain management, it gets evident that network goals have to be divided into ones that aim to achieve parity with the competitors and ones that aim to create a competitive advantage. Therefore, the collective strategies have to include operative and strategic network goals in order to provide the competitiveness of the network. With regard to competitiveness, an important source of competitive advantage resides in relational network characteristics. Except for network members, relational network characteristics include the network structure and the tie modality, i.e. a particular pattern of relationships and features of collaboration, respectively (GULATI ET AL., 2000). On account of this, the achievement of success requires an appropriate network structure concerning network density, structural equivalence, etc. Besides, tie modalities have to be optimised with regard to the strength of the connections and the nature of the ties among firms. Either strong or weak, the inter-firm ties can influence the achievement of operative and strategic network goals. Additionally, the nature of the relationships – either collaborative or opportunistic – may impact on the success of SCN. An arrangement of appropriate tie modalities can be perceived as a goal itself, e.g. to deal with the problems of rivalry and opportunism in networks.

According to this argumentation, we perceive the duty and responsibility of the focal company as to work out a strategic setting that outlines the common aims of all participants, considers incentives on the firm level and includes satisfactory relational characteristics. In order to solve or prevent conflicts between chain-related (network-related) and firm-specific goals, the focal company has to elaborate on conflict solving mechanisms. Generally, mechanisms to overcome

conflicts are named in management literature but they have to be specified to collaboration setting. Because the active part of the strategy setting lies in the responsibility of the focal company, we understand the involvement of the other network companies in the strategy outlining process as being rather indirect. Overall, we assume that most network companies are involved rather by giving some feedback directly or indirectly (e.g. by opportunistic behaviour). In the case of strategic families (ALBACH, 1992), a few key suppliers are more closely involved in the strategy creating process. However, in the agri-food business this is rather the exception than the rule.

Moreover, focal companies as the predominant strategy setting unit have to take into account that the aims and mechanisms of the 'sub-strategies' i.e. partnering and supply chain management strategies might be conflicting. For sequential interdependencies the introduction of hierarchies and thereof a clear dispersion of power is a preferable coordination mechanism. However, from the cooperative perspective power is often perceived as the antipode of trust. Thus, the inclusion of power as a coordination mechanism might be conflicting with the goal to create a trustful chain environment. Again, the collective strategy has to include mechanisms to solve this conflict or at least to minimise to a minimum level.

## 5. Summary

Based on our arguments, it is evident that successful chain management in agri-food business is a tremendous task. The reason resides in the nature of goals set in supply chain networks. The process of goal setting in the network is undertaken at least at two levels, i.e. at the network level and at the firm level. Therefore, potential conflicts between these two levels must be solved in order to achieve network goals. Additionally, network-level goals are most often set by a focal firm, i.e. at the firm level. This can lead to impediments in achieving network goals due to misunderstanding of their importance by other network actors. Furthermore, collective strategies used in supply chain networks may pursue goals which can also be conflicting. In this context, the task of the focal company is to implement collective strategies which are maximally understandable, with least contradicting goals, and consider the common and single aims of all network members including incentives at the firm level.

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