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The Glue that Holds Together Supply Chain Networks

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Abstract

As in the agri-food business supply chain networks are evolving in our paper we want to elaborate on managerial questions regarding them. In this context our first aim is to advance the concept of chain management by introducing a more differentiated view. Since many articles highlight the pivotal role of communication the second aim of our paper refers to the role of communication for the management of supply chain networks. Because the agri-food business is still dominated by small and medium-sized enterprises our third aim is to apply our thoughts of chain management on small and medium-sized enterprises.

Keywords: *communication, chain management, handicraft business, strategic networks, trust*

1. Introduction

Resulting from the various food crisis as well as from the fierce competition in the agri-food business today food quality and security as well as efficiency and competitiveness are no longer in the responsibility of a single firm. Instead, the whole food chain needs to work together in order to deliver food quality as well as the needed competitiveness. Thus, vertical organised process organisations have evolved which are either vertical integrated firms or collaborations. In this paper we focus on networks in the agri-food business. The agri-food business is characterised as the entity of participants involved in the production and in the distribution of food products. In Germany the majority of firms are small and medium-sized enterprises (SME). In particular, consisting of more than 41,000 firms the food handicraft businesses are small, family-run enterprises. The same is true for the agronomist sector. Overall, there are more than 500,000 farms in Germany. About half of them are run by full time farmers. As, the majority of participants of the German agri-food business can be considered to be SME it becomes evident that vertical networks consist not only of numerous actors but also of very heterogeneous ones. These networks are co-ordinated by powerful focal companies that are able to exert power in order to align the collaborating firms on a special purpose. Additionally, being strategic networks they are characterised by recurring actions, an intensive relationship and a pyramidal-hierarchical configuration. Therefore, if a focal company wants to co-ordinate its network it needs special co-ordination mechanisms.

In this context the first aim of our paper is to advance the concept of chain management by introducing a more differentiated view. For strategic chain management a central task is to create a culture of shared norms and trust enhancing the exchange of strategic information and lowering opportunistic behaviour. As many articles show communication plays a pivotal role

for these matters. Speaking with Mohr and Nevin (1990) “communication can be described as the glue that holds together a channel of distribution”. Thus, the second aim of our paper is to elaborate on the role of communication for the management of a strategic network. As mentioned above the majority of the German agri-food business are small and medium-sized enterprises. On account of this, supply chain network and the corresponding chain management have to be analysed in this context. Therefore, we want to thirdly aim to apply the chain management concept on SME. However, we will narrow our analysis on the food handicraft business.

2. Chain Management

2.1 Supply chain 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). Thus, they generally address all questions on inter-organisational relationships of more than two firms (Lazzarini et al. 2001). In general, several advantages resulting of co-operation have been named i.e. cost and risk reduction as well as sales and revenue increase (Arbeitskreis 1995). Besides such financial incentives also non pecuniary incentives like power and trust motivate the actors to co-operate (Uzzi 1997). However, beside the advantages of co-operation there are also some constraints: divergent aims of the actors, information asymmetries, partitioning of gains and losses, opportunistic behaviour, etc. (Arbeitskreis 1995). In order to take a more differentiated look on them networks can be grouped into spontaneous, self-organising, project-orientated, and strategic networks based on the differences in the intensity of the relationships, the degree of co-ordination in the network, the duration of the network, and the existence of a focal company (Burr 1999). For the subsequent thoughts the strategic network is of importance. In such a pyramidal-hierarchical network a strategy leading focal company builds the core element of the network (Jarillo 1988). Because of the long lasting explicit or implicit contracts the other network actors are heavily depending on the focal company. Whereas, the level of dependency is higher for vertical than for horizontal ties (Wildemann 1997). Especially, in the agri-food sector the vertical linkages are relevant in order to guarantee the consumer the correctness of credence attributes like organic produced. Additionally, not sharing information along the whole supply chain causes a building up of supplies i.e. unnecessary stocks are build which is characterized as the so called bullwhip effect (Haehling von Lanzener/Pilz-Glombik 2000). This problem of inefficiency can be solved by softening the information barriers so that critical and sensitive information like scanner data and the amount of stocks etc. can be passed throughout the whole chain. In the context of the agri-food business such networks are called supply chain networks or netchains (Hanf/Kühl 2004, Lazzarini et al. 2001).

2.2 Management of supply chain networks

Supply chains consist of a number of consecutive stages and at any stage of one or more independent firms. The material flows have to be co-ordinated as to timing, quantity, quality and other factors. Vertical co-operation between firms requires a great deal of co-ordination between the partners and these can only be efficiently aligned by a sophisticated management concept (Bogaschewsky 1995). Although the managerial concepts of single enterprises can in principle also be used in networks, a much more detailed analysis has to be conducted in order to enlarge these managerial concepts for netchains. On account of this, various authors have introduced the concept of collective strategies (Astley 1984, Carney 1987, Edström et al. 1984). Collective strategies can be re-active, absorbing variation within an environment, or they can be pro-active forestalling unpredictable behaviour by other organisations (Astley/Fombrun 1983). One reason to implement collective strategies in co-operation is to overcome co-ordination difficulties arising from interdependencies among the network firms. 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) pooled interdependencies, ii) vertical interdependencies, and iii) reciprocal interdependencies (Astley/Fombrun 1983, Theuvsen 2004). Being the centralized decision making unit in a pyramidal-hierarchical strategic network the focal company has to consider the three different types of interdependencies company in designing the network, its collective strategy and the co-ordination mechanisms. Lazzarini et al. (2001) provide the advice to exert managerial discretion for sequential (vertical) interdependencies. For pooled interdependencies they recommend the achievement of process standardization, and for reciprocal interdependencies they suggest co-ordination through mutual adjustments. More generally interdependencies can be addressed by formal and informal mechanisms. Formal mechanisms are programming, hierarchy, and feedback (March/Simon 1958, Thompson 1967) whereas the informal mechanisms are leadership, norms, culture, shared values and experience, routines and behavioural patterns as well as a shared strategy. Besides the right approach to interdependencies chain management must also analyze co-operation on three different levels namely firm, dyadic and network level (Duysters et al. 2004). Analyses at the firm level show that successful co-operation employs a significant number of managerial constructs known from single firms. Analyses at the dyadic level demonstrated that the costs of specialization are frequently higher than the costs of co-ordination, making co-operation a favourable opportunity. On account of this, the governance structure has great impact on the performance. Further on, investigations at the dyadic level stress the critical role that trust and commitment play in the success of co-ordination (Duysters et al. 2004). Studies at the network level emphasize the role of social capital to enhance and bring about information exchange resulting in information advantages (Uzzi/Gillespie 2002). Furthermore, the capabilities, the knowledge, and the skills that partner firms possess are recognised as sources of competitive advantage. Consequently, network performance is related to the current ties and to the ties with potential partners because the satisfaction with the other partners and with the relationship influences the quality and duration of the relationship decisively (Mohr and Nevin, 1990). Thus, an important point of chain management is the topic of partnering. 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). Webster (1992) proposed a continuum from independent partnerships to strategic partnerships. Strategic partnering is defined as an “on-going, long-term, interfirm relationship for achieving strategic goals, which deliver value to customers and profitability to partners” (Mentzer et al. 2000, p.550) while independent partnering is defined as a “needed, short-term relationship for obtaining parity with competitors” (Mentzer et al. 2000, p. 550).

3. Communication in supply chain networks

Since the exchange of (sensitive) information between the network partners is a characteristic of supply chain networks we want to elaborate on the managerial role of communication in this paragraph. Traditionally, studies of organisational communication have been focused on intra-organisational communication i.e. the lines of communication within an organisation have been analysed and possible management improvements have been elaborated. Nowadays, communication between organisations (inter-organisational communication) attract more scientists’ attention. This strand of research has been pushed through increasing importance of relationships between partners in distribution chains for the achievement of economic success. For example, Tuten and Urban (2001) carried out an empirical study on business-to-business partnership formation and success in USA. Purchasing managers were asked which determinants are decisive for successful partnerships. The importance of improved communication was the second most frequented response.

However, as communication is studied through different disciplines developing different theories and defining communication in a variety of ways a single definition of communication does not exist. In the context of supply chain networks we understand communication as the sharing of information that provides the timely and appropriate exchange of ideas and information between the participants of the network. In traditional supply chains information and goods flows in opposite directions. Therefore, it is time demanding to transmit information from one end of the chain to the other one. For example, the information on consumer demand changes will not arrive the commodity supplier early enough. On top, the probability of input data errors increases with each additional person involved. In contrast, “modern” netchains use information warehouses which allow access to information by all chains’ partners. Hence, communication in netchains can be seen rather as an arena of shared or not shared messages than just a flow of transmitted messages (Hakkio/Laaksonen 1998). Bringing suppliers, partners, and even customers into the information loop is critical to a company’s quick response and strategic movement in adapting rapidly to market changes (Baker 2002). On account of this, communication enables to learn of and react on changes in partners’ expectations as competitive pressure, technology, and government regulations. On the other hand, ineffective communication causes conflicts resulting in not properly working relationships. Overall, communication in networks can serve as the process by which persuasive information is transmitted, participative decision making is fostered, programs are co-ordinated, power is exercised, and commitment and loyalty are encouraged (Mohr/Nevin 1990). In order to gain these advantages trust can be regarded as a prerequisite because trust reduces the perception of risk associated with opportunistic behaviour, encourages effective communication and information sharing, and might create strong social bonds. It is through making promises and keeping them that trust develops. Under conditions of trust and support,

organisational members more willingly pass information upward. Moreover, the increase in upward communication adds to the information flowing downward and communication is more bidirectional. In contrast, when trust is low channel members are more unwilling to pass information upward i.e. in low trust climates communication is primarily unidirectional (Mohr/Nevin 1990). Therefore, optimal communication strategies differ in accordance to the network conditions as well as its structure. In this context, we want to draw the attention on the matter of interdependencies. Pooled interdependency are addressed by a standardisation of all communication throughout the whole network. This also provides an optimal flow of (technical and operative) information through out the whole supply chain network so that managerial discretion addressing sequential interdependency can be exercised. However, having shown the connexion between trust, commitment, and enhanced communication it is getting evident that communication is of major importance to manage reciprocal interdependencies. Thus, communication can be described as the glue that holds together co-operation within distribution channels (Mohr/Nevin 1990). Or to speak with other words, communication is one of the most important factors to successful inter-firm co-operation (Bleeke/Ernst 1993, Mohr et al. 1996).

4. Chain management of small and medium-sized enterprises

4.1 Characterization of SME

As the German agri-food business consists in this majority of small and medium-sized enterprises we want to elaborate on them in this paragraph. Medium-sized firms can be characterized by having up to 500 employees with a turnover of up to 50 million Euros whereas small-sized enterprises have up to 9 employees with a maximum of one million Euros turnover. Both types of firms are private owned so that the owners themselves are managing the enterprises (Weseloh 2004). As SME have only few hired managers and employees each of them has a bundle of managerial and organisational function resulting in time restraints and a lack of planning (Risseuw/Masurel 1994) so that intuition and improvisation are of high importance. Since SME are private owned they are characterised by an authoritarian leadership style resulting in a reduced degree of formalization. In an empirical study of SME in Germany Weseloh (2004) has found that about 70 % of them have procurement relationships which can be described as long term oriented and of co-operative nature. Interestingly, the majority of suppliers (60 %) of tangible inputs are based in foreign countries whereas only 10 % of the procurement relationships are accomplished within the same county or federal state.

4.2 Managerial challenges

Obviously, there is a significant difference in the size between small and medium-sized enterprises. Thus, we want to focus solely on the food handicraft business. Even though, this sector can also be characterized of being heterogeneous the majority of firms is rather small so that the owners run the management without employed managers. On account of this, most of the business is done in the vicinity rather than on national level. Since the (local or regional) procurement ties of handicraft businesses are traditionally stable and long-lasting these SME

have built (implicitly) supply chain networks. Facing the competition of large retail chains - which has increased since discount retail chains have entered the fresh meat and bakery product categories in the last years – these small firms have to enhance their competitiveness. Thus, there is a need for a chain management which takes into account the characteristics of small enterprises.

Such a chain management approach has to have a collective strategy determining the aims of the co-operation as well as it has to include packages of measures which have to be taken. The collective strategy has also to take into account the three different level namely firm level, dyadic level, and network level so that there are no inconsistencies between them. Additionally, such a super-ordinate strategy helps to align the individual firm strategies. Moreover, the collective strategy and thereof also the chain management has to consider the topic of partnering. Since the aim and the strategy of the co-operation determine the intensity of the relationships within the supply chain network the design of the partnering approach – the continuum between independent and strategic partnering – has to be chosen. As food handicraftsmen often use premium quality strategies in order to create a unique selling proposition and since nowadays food quality is no longer the matter of a single enterprise we assume that netchains of handicraftsmen rather have strategic partnering approaches. Besides the questions on the right partnering approach a chain management concept has additionally to cope with the existing and evolving interdependencies in supply chain networks. In this context the formal and informal mechanisms have to be included. On account of this, chain management has to consider besides programming, hierarchy, and feedback also experience, leadership, norms, culture, shared values, and mutual adjustment. For the last ones communication is of particular importance because via communication persuasive information is transmitted, participative decision making is fostered, power is exercised, and commitment and loyalty are encouraged. Furthermore, communication helps to build trust between the involved network firms. Since in the handicraft business the owners themselves are in charge of the managerial affairs - thereof also for the management of their business relationships - they ascertain that there is always the same contact person. Thus, in this case trust has to be developed towards a person and not towards a legal entity with changing contact persons. Additionally, since business is done most often in the vicinity the reputation of the handicraftsmen are widely known as well as social sanctions are more easily applied so that opportunistic behaviour is less likely. Therefore, we think that reciprocal interdependencies can be addressed rather successfully in handicraft netchains. However, regarding pooled interdependencies we expect some problems since investments in standardisation of information management concepts as well as in the IT-infrastructure are of a high financial burden. Since sequential interdependencies are addressed by managerial discretion and the construction of an hierarchy we do not expect any differences at handicraft networks than in any other supply chain network.

5. Summary

In the agri-food business vertical process organisations have evolved. In this paper we focus on supply chain networks which are strategic networks. Such networks are characterized by pyramidal-hierarchical configuration. This implies that a focal company exists which has to co-ordinate its network so that it needs special co-ordination mechanisms. However, the

creation of a management system for a whole supply chain network is a tremendous organisational task that the focal firm has to accomplish if network advantages are to be utilized. Such a chain management concepts has include several aspects. First of all a collective strategy taking into account that networks consist of three different levels - the firm level, the dyadic level as well as the network level. As networks are collaborations composed of several network firms a chain management has to include also mechanisms dealing with questions concerning the design of the relationships. This design can vary along a continuum from independent to strategic partnering approaches. Further on, a chain management concept has also to address the matter of interdependencies which can be solved by a number of formal and informal mechanisms. An important role in chain management in particular addressing interdependencies has communication. Overall, communication in collaborations can serve as the process by which persuasive information is transmitted, participative decision making is fostered, programs are co-ordinated, power is exercised, and commitment and loyalty are encouraged. Thus, communication can be described as the glue that holds together supply chain networks.

As the above scratched thoughts are aiming at supply chain networks in general in a second step we have analyzed small and medium companies with a special focus on food handicraft business. We have shown that for these enterprises chain management is also of importance even though their characteristics have to be taken into account. Being managed by the owners themselves and operating mainly in the vicinity we assume that they have a particular strength in dealing with reciprocal interdependencies.

6. Literature

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