

**„Quality Management in Strategic Networks –  
Is there any Relevance in the Polish Dairy Sector?“**

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## „Quality Management in Strategic Networks – Is there any Relevance in the Polish Dairy Sector?“

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### **Abstract**

The most striking consequence of recent food scares was that food quality is no longer the concern of a single firm, but instead the whole food chain has to work together in order to deliver the “new quality”. For the agri-food business there is evidence that the majority of these more highly co-ordinated chain organisations are organised as vertical networks. The aim of the paper is to determine the degree of influence which the chosen quality strategy exerts on the vertical co-ordination mechanism. A theoretical framework has been developed based on new institutional economics and strategic management theory. The findings are used to analyse the Polish dairy sector and elaborate on the relevance of quality management for this sector.

**Keywords:** *network theory, relationship management, quality management, Polish dairy market*

### **1. Introduction**

As products become more differentiated, commodity requirements become more demanding, which leads to higher and more specific quality demands. Additionally, as a consequence of various food scandals, consumers’ perception of food quality has changed. All of these reasons have caused politicians and consumers, as well as producers and suppliers to assess food quality as no longer the concern of a single firm, but instead the whole food chain, which must work together in order to deliver the “new quality”. Thus, in order to meet the demanded new quality, food processors and retailers have to re-design their food chains in such a way that they take into account all stages of the food chain. Due to this, the co-ordination mechanism of existing food chains has to be altered.

The aim of the paper is to determine the degree of influence which the chosen quality strategy exerts on the vertical co-ordination mechanism. In a first step, we develop a theoretical framework using approaches from new institutional economics and strategic management. The main intention of the theoretical section is to provide a background against which empirical facts can be given economic meaning. In the second step we elaborate on the relevance of quality management for the Polish milk supply chain.

## 2. Characterisation of Quality

The quality of food products depends on a bundle of characteristics. Overall, these characteristics can be categorised in three groups: search and experience attributes, first introduced in the economic literature by Nelson (1970), and credence attributes as introduced by Darby and Karni (1973). For search goods, the buyer is able to find evidence of the attributes even prior to the purchase (Hanf 2000), whereas for experience goods the verification of the attributes' correctness can only be exercised after the purchase. Credence attributes are product and service characteristics that cannot be detected by the buyer under ordinary circumstances, neither before nor after the buying process, such as safety, environmental friendliness, and use of GMO's. It became apparent that these quality dimensions altered the perception of food products from rather uncomplicated raw commodities with easily detectable qualities, to somewhat more sophisticated goods (Andersen 1994).

Today's European consumers have shown a loss of confidence in the supply chain's ability to provide safe food. There are many reasons for the loss of confidence, food scares being the most important among them. For example, as people recognised their inability to prove the correctness of credence attributes, they reacted, in the case of food quality scares, with a sharp reduction in demand for specific food items (Böcker/Hanf 2000). Many factors influence consumers' buying decisions such as failing to remember, bounded rationality, asymmetric information, and time constraints. Hence, consumers will not be able or willing to intensively and completely prove the quality of their food products, instead looking for signals to ease their buying decisions e.g. a well-known brand or a certificate of quality. For these reasons, the participants of the food chain are currently taking different measures to regain consumer confidence. One of these measures, taken by several of the actors in the food chain, is to establish their own quality assurance systems. Such systems demand the formation of hybrid organisations in which a focal company has to build control and co-ordination mechanisms throughout the whole production.

## 3. Quality management of supply chain networks

### *3.1 Supply Chain Networks*

Networks address all questions of inter-organisational relationships of more than two firms. One approach of classifying networks is taken by Burr (1999), who places them into four groups: spontaneous, self-organising, project-orientated, and strategic. This typology is 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. Strategic networks are hierarchical-polycentric structures with the strategy-leading focal company being either a manufacturer or retailer. Because of the long-lasting explicit or implicit contracts, the involved actors heavily depend on the focal company. 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 for meeting the varied and variable consumer needs in a competitive and sustainable way. Thus, networks in this sector are generally strategic networks in which the vertical perspective dominates, with quality initiatives being challenged by a focal company.

Such strategies have been defined by various authors as “supply chain networks” (SCN) or netchains (Lazzarini et al., 2001, Hanf 2004).

### *3.2 Chain Management*

Vertical co-operation within a supply chain requires a great deal of co-ordination between the partners, which can only be efficiently aligned by a sophisticated management concept (Bogaschewsky 1995). An important point for chain management is the topic of partnering. Partnering is a term that addresses issues 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 along the whole chain, the optimal mode of partnerships widely varies. Thus, the focal company has to work out how the partnerships should be designed. Similar to Mentzer et al., (2000) we divide partnering into strategic and operational partnering. Strategic partnering is defined as an on-going, long-term, inter-firm relationship for achieving strategic goals. 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 refers to a “needed, short-term relationship for obtaining parity with competitors” (Mentzer et al., 2000, p. 550). Thus, an operational partnering strategy seeks to improve operational efficiency and effectiveness.

### *3.3 Quality management of chain networks*

Now we address the special prerequisites of quality management concepts of food SCN. Food quality management systems must perform at least two main tasks that go far beyond a firm’s boundaries. Firstly, the system has to fulfil the legally-demanded commitments of providing transparency and traceability of any food item; secondly, it has to develop a positive reputation.

The first task demands a rather sophisticated technical solution which can be illustrated by the requirements of transparency: Transparency can be divided into historical, operational, and strategic transparency (Theuvsen 2004). Historical transparency is characterised as the “provision of an additional information flow which accompanies products down the food chain on their way to the consumer”. Therefore, tracking and tracing systems, labelling technologies, and organisational solutions have to be installed. Operational transparency comprises the sharing of information throughout the food chain, and strategic transparency requires “the exchange of strategic information between business partners”.

The second task, positive reputation, can only be accomplished if the system manages to create and disseminate confidence in the food supplied, particularly to such credence attributes like food safety. This presupposes that the supply chain partners can rely on one another because of their fair and honest business practices. Furthermore, the design of the governance structure has to bear in mind that consumers’ behaviour alters between learning and failing to remember, and that their risk perception changes over time. This implies that credence attributes which hold a high value in times of a scare might have little value when there is no scare. As a result, the designs of the governance structure of chain quality systems cannot be static; instead,

flexible approaches have to be preferred (Hanf/Hanf 2005). Further on, various member firms exhibit varying partnership strategies. To overcome this internal heterogeneity, we propose dividing chain quality management into strategic and operative segments: it should be much easier to formulate an integrated and consistent management system with such a division.

#### *Operative Quality Management*

Recently established inter-firm food quality management systems are all generated by current demands for minimising the safety risks of food consumption. Vertical systems like ISO and QS, as well as the horizontal systems such as IFS and EuropGap mainly draw upon standardisation systems. These systems are supplemented by standard approaches to history transparency and operation transparency requirements. In order to fulfil transparency requirements, formal supply chain networks were established. Affiliation with such a standardised supply chain network brings no (or very minor) competitive advantage, as standardisation procedures are already widely used. If a cost advantage should be reached, the focal company of a supply chain network must, at least, apply an operational partnering strategy. The aim of this kind of complementary strategy is twofold. First, the tracing and tracking system, as well as standardisations, are utilised to gain parity with the partnering firms. Second, by selecting quality partners, the efficiency of the network is fortified, which diminishes the misuse of resources in the whole netchain. However, such gains in efficiency and effectiveness are essential because consumers are not willing to pay a premium price for standard products, and the implementation and maintenance of such approaches is high in cost. Only if the costs can be offset by respective gains can the collaborative relationships be perpetuated over a period of time during which the consumers value safety attributes highly (Hanf/Hanf 2005).

#### *Strategic Quality Management*

Any food quality management system has to include the aforementioned standards for food safety. Such food safety standards are established for the majority of food products and must be considered in any case. Therefore, no competitive advantage is to be expected from the affiliation to such a standardisation system. The focal firm can try to utilise the operative quality management system in order to create long-term enduring competitive advantages by adding strategic components for a subgroup of the supply chain network. In this case the focal firm has to convince the selected partners to accept additional quality attributes and norms higher than the basic standards. A number of food products are suited to realising these competitive advantages because a unique selling proposition can be reached. This may result in the possibility of demanding a price premium or increasing sales quantity. We think that credence attributes especially can be used to create such additional value propositions. Based on credence attributes, such a strategic partnering concept is hard to imitate, and the benefits are exclusive to those members of the selected SCN. In order to permanently establish such strategic quality management, a collective strategy has to be developed (whereby a collective quality strategy means a systematically-planned approach of the collaborative firms within the supply chain network) in order to reach a common level of quality. Such a collective strategy is necessary, as the quality decisions and actions made by one partner influence the decisions and actions which partnering firms face. Hence, strategic quality management has to consider evolving interdependencies as well as the arising strategic transparency. Additionally, a strategic quality management system has to address all issues discussed in the previous

section. Above all, the establishment of trust between the partners and the creation of a chain culture of honesty are important. (Hanf/Hanf 2005)

#### **4. Relevance of chain quality management in Poland**

In this section, we turn to empirical evidence and discuss how theoretical suppositions are actually reflected in the Polish dairy sector. Therefore, we have to first touch upon the general characteristics of the market participants (consumers, retailers, dairies, and farmers). Thereafter, we will synthesise our thoughts regarding quality strategies and management and events in the milk chain.

##### *4.1 The Polish milk chain*

In recent years an increasing amount of Polish consumers' disposable income, and a convergence towards consumption patterns similar to Western Europe have been observed. Thus, there is a growing perception and sensitivity in the field of quality issues, including safety, nutrition value, product diversity and tightness of product specification. However, Poland is still one of the poorer OECD countries, so the generally low income hampers the demand for high-value added milk products. Furthermore, there is an increasing income disparity among various consumer groups in Poland. These developments strengthen the market segregation processes and lead to an evolution of various marketing strategies amongst the milk supply chains.

The procurement practices and requirements of direct purchasers have profound effects on the milk processors and producers in Poland. The basic characteristic of the Polish retail sector is its very heterogeneous structure with regard to size, ownership structure, and demanded product specifications. Moreover, all significant players are from Western Europe, taking along their Western business models and practices. However, many supermarkets continue to be operated by small domestic companies and co-operative groups. Independent small outlets still play a key role in the national food supply - especially in small towns and poor rural areas. Despite the seemingly high pressure of the downstream stages, some dairies do not even manage to adapt to mandatory standards. For example, according to the assessment of the Polish General Veterinary Inspectorate in June 2005, nearly a third of the milk processors still did not comply with the basic hygiene requirements as regulated in CD 92/46/EEC. Furthermore, there are still many firms which do not comply with the general hygiene rules laid down by the Polish Food Law. The quality of final milk products has been steadily improving since the mid-1990s. However, there are still some problems concerning microbiological standards (GUS, 2005). Besides the safety risk caused by food contamination, there is an increasing violation of the mandatory regulations in other fields, especially in misleading the consumer regarding product ingredients. These mainly concern products manufactured by small and medium-sized dairies, since these firms are at first faced with intensifying price competition and pressure on production costs. Even though unbranded and branded products co-exist in the Polish dairy product market, an increase in the market share of branded (higher quality) products is increasingly evident. The majority of the branded products are manufactured by large companies, either foreign (e.g. Danone, Zott) or Polish private dairies (e.g. Bakoma) or cooperatives (e.g. Mlekovita). At the same time, more and more retailers are selling their proprietary private label products in competition with the

manufacturers of nationally-branded products. Branded products command a premium price for manufacturers compared to producing foods for private label retailers. Thus, private label milk products, especially UHT-milk, yogurt, and cottage cheese continue to steadily increase their share in the Polish marketplace.

The foundation for food quality along the food supply chain is laid down in the production phase; the availability of high quality raw milk is still a problem for some dairies in Poland. Even if tightening legal requirements in the frame of EU-integration has led to a gradual improvement in average milk quality, some part of the procured milk still has a quality lower than extra class. Mandatory hygiene standards will restrict market access for non-complying farms after the expiration of the transitional period (2007). Traditionally, milk production in Poland had been dominated by small-scale farmers. With a shift towards more concentrated and specialised milk holdings, especially amongst full-time farmers, producers facilitate the development of vertical procurement relationships and quality management along the milk supply chain.

#### *4.2 Quality strategies and management*

In this section we will bring together our thoughts on strategic and operative quality management on the Polish milk chain. Developments on the consumer level strengthen the market segregation processes and lead to an evolution of various marketing strategies. On the one hand, well-off consumers care more for high quality food and are therefore less sensitive to changes in the price of quality products. In this market it is important for a firm to attract and keep consumers by providing consistently high quality. Thus, producers of quality goods have more scope for additional costs due to both the implementation and adherence of quality assuring systems. On account of this, strategic quality management is the right approach. This implies a reorganisation of procurement relationships in order to adapt to changing consumer preferences, which hopefully leads to more highly-co-ordinated chain organisations and product differentiation. On the other hand, consumers with a low income still dominate the Polish market. The demands of this consumer group are sensitive to changes in product prices; a small increase in prices for low value added goods would be associated with a considerable loss of market share. In such cases, sufficient factor remuneration may be achieved by a company pursuing a cost leadership strategy. Since EU accession, the prices for raw milk have increased in Poland much faster than disposable income. To reduce production costs, firms tend to use cheaper raw materials and ingredients, i.e., vegetable oils for producing butter. There is little scope left for additional costs due to the implementation of voluntary quality standards, which results in an operative quality management strategy organised by loose contractual structures.

At the retail level, most retail chains impose more demanding production requirements than the basic legal requirements and usually rely on contractual relationships with upstream producers. Thus, procurement must be supported by relationship-specific investments, which raise the compliance costs and impede access to these distribution means for some, especially low capacity firms. This suggests a dairies' decision towards a quality orientation is increasingly determined by private labels developed or imported by multinational retail chains. Hence, those retailers take the role and responsibilities of the focal company, and challenge the proprietary strategic quality management system along the whole milk supply chain. The range of offered assortments is closely tailored to Polish taste and remuneration possibilities.

Consequently, the majority of hypermarkets address both high and low income consumers by offering both premium private labels and labels in the low price segment (e.g. Tesco, Geant, Real). The development of a positive reputation and retaining consumer loyalty is very important to all retail chains. For example, sometimes it is difficult to recognise the true ingredients of the delivered products (e.g. soybean proteins versus animal proteins). In order to detect fraudulent claims regarding the used ingredients, some retailers undertake their own supply quality initiative, which are completely new for the Polish market; an example of this is the DNA analysis of foods purchased by the wholesaler chain Makro.

If the dairy is itself the focal company, it has to choose its own quality strategy. For the sake of simplicity, we focus on a quality or cost leadership strategy. To create quality advantages due to maintaining credence attributes of their products, some milk processing firms go beyond the mandatory standards and apply more sophisticated quality assurance systems. Particularly well-performing and large enterprises have introduced their own firm-specific quality assurance systems. One example is Charte Danone, imposed by the International Danone group, that is obligatory in all Danone establishments. Some dairies address environmental friendliness quality aspects among credence attributes. Choosing the opposite strategy of cost leadership, such dairies stick to basic mandatory quality and food safety standards, which in general concern small and medium sized companies trying to achieve cost leadership. However, since economies of scale are of high importance in the dairy business, we predict that these companies will not last for long. Nevertheless, aiming to meet the demands of low income consumers requires cost leadership strategies to employ operational quality management. Regardless of whether it is a strategic or operative quality management, the companies have to use different instruments to assure the quality of procured milk, i.e., quality-related payment schemes which take into account the quality class (microbial number, cell count), milk content (fat, protein), and other quality criteria (inhibitors, freezing point). Additionally, the dairy firms provide a supplementary payment; this occurs when a milk producer is approved by the competent veterinary authority, i.e., if the raw milk concerned meets hygiene requirements and is accompanied by a health certificate. Additional provisions exist as well, and are set up in individual contracts between the dairy farmer and the processor. Besides these indirect mechanisms, more direct and unambiguous instruments are applied to assure the demanded quality of the raw milk. It can be observed that especially during transition, dairy processors provided financial support to milk producers, including short-term credits for animal feed as well as long-term leasing arrangements. The processors invest in building, milking equipment, etc., which reduce the asymmetry of information about production techniques, and thus provide a better platform for decision-making (Hockmann/Pieniadz, 2005). One result of these developments is that during the year 2000, the quality gap of milk had almost disappeared, at least as far as large-sized firms were concerned (Dries/Swinnen 2005).

## **5. Conclusion**

When answering the general question of whether quality management systems in the Polish dairy sector are relevant, the perspective must be clear. In order to ensure a high level of consumer protection and to be able to stay in the marketplace, all stakeholders in the milk supply chain have to develop at least operative quality management systems. However, the benefits of implementing more sophisticated quality assurance schemes seems to be currently



hampered by the low income level of the Polish consumer and depends on the company size and requirements of the focal purchaser. Nevertheless, the increase in market share of branded milk products indicates that there is a growing demand for credence quality aspects and unambiguous quality signals in Poland. At the same time, consumer trends towards premium branded products are evident. The increasing disposable income of Polish consumers and the growing perception and sensitivity in the field of quality issues will fuel the initiated consumer trends in the future.

Hence, in order to meet the emerging demand for new quality food in a profitable and sustainable way, all processors and retailers will have to redesign their food chains in such a way that they take into account all stages of the food chain. Because of this, the co-ordination mechanism of the existing food chain has to be altered towards more highly-co-ordinated chain organisations, i.e., hybrids or vertically-integrated firms. Despite some progress in the last few years, the establishment of strategic quality management systems is still an emerging paradigm in Poland and mainly concerns firms operating in the premium quality segment. The majority of quality management initiatives are operational. Particularly, the premium quality processors will be forced to redesign their marketing strategy, and hence to adopt their supply chain network in order to remain competitive and viable in the market place. However, it is very likely that those firms may have some competitive disadvantages in the dairy market in the future, because their performance enhancements will be hampered by better organised and more efficient firms. Hence, some market clearing processes could be expected.

In conclusion, even though today's vertical procurement is done through arms-length transactions, in the future, considerations of supply chain networks, and therefore of firms' overlapping quality management boundaries, will gain in importance.

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