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Jon Hanf, Agata Pieniadz

Leibniz Institute of Agricultural Development in Central and Eastern Europe
Halle, Germany

pieniadz@iamo.de



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Jon Hanf, Agata Pieniadz
Leibniz Institute of Agricultural Development in Central and Eastern Europe,
Halle, Germany
hanf@iamo.de, pieniadz@iamo.de

Summary

This paper investigates the relationship between the chosen quality strategy and the vertical co-ordination mechanism of a focal company by using new institutional economics, as well as strategic management approaches. The theoretical findings are tested using evidence from 19 of the largest Polish dairy cooperatives, surveyed in spring 2006. The results show that all co-ops recognise the changing market requirements and are treating food quality as more than plain food safety and the ability to continuously reproduce an *ex ante* defined set of attributes. However, compared to investor-owned dairies, co-ops are disadvantaged in quality-based competition due to their lower flexibility and access to financial and qualified human resources. To overcome this intense competition, co-ops modify their production profile, which leads to market segmentation. Moreover, the choice of quality strategy is an economic activity, guided by the co-op's profit expectations within the selected market. The chosen quality strategy determines the design of the vertical co-ordination mechanism. Thus, the higher the requirements for the final product, the further quality management systems go beyond a firm's boundaries, and the higher is the intensity of the relationships between the intermediary stages in the dairy chain.

KEYWORDS: network theory, relationship management, quality management, cooperatives, Poland

1. Introduction

In countries where food is no longer scarce, questions of food security are becoming less important. Instead, issues addressing food safety and quality are gaining in importance. Thus, in most developed countries, food quality has been used as a means of differentiating food products (branded products versus non-branded products) whereas food safety has become a competitive necessity. However, due to food scares such as the BSE- and FMD-crises, or more recently, the "rotten meat" scandal in Germany, food safety issues connected with firm boundaries that overlap vertical interactions hold differentiating potential. Hanf/Hanf (2005) considered the most striking consequence of these dramatic food scares the fact that politicians, consumers, producers and suppliers all assess food quality as no longer the matter of a single firm. Instead, the whole food chain has to work together in order to deliver the "new quality". Since food-borne hazards know no geographical boundaries, food safety standards have become a ubiquitous phenomenon that nationally and globally influences agri-food markets. Additionally, as products become more differentiated, commodity requirements are becoming more demanding, which leads to higher and more specific quality demands. 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 these standards are adhered to every step of the way; thus, the co-ordination mechanism of the existing food chain must be altered. Spot market transactions, which are unable to properly co-ordinate the exchange of trust attributes, are substituted by transactions in vertically co-ordinated chain organisations. Such higher co-ordinated chain organisations are either hybrids or vertically integrated firms. For the agri-food business, there is

evidence that the majority of these chain systems is organised as vertical networks, i.e., supply chain networks (SCN).

In transition countries or new member states, quality management concepts might still be an emerging field and might be used as a differentiating instrument: Through EU-accession, the structure of those markets has shifted towards more globalisation and competition based on quality and price differences, rather than just price. On the one hand, the minimum quality standards of the EU set a bottom line that forces low-quality producers to raise their quality or drop out of the market. On the other hand, private standards such as the “International Food Standard” (IFS), and Standards of the “British Retail Consortium” (BRC), as well as industry-wide standardisation systems like the family of ISO standards are diffusing to those markets from Western countries. Concurrently, the new EU member states are seeing changing consumer demand – in terms of incomes and concerns over product standards. The changing environment in those markets, including both mandatory and voluntary standards, and ongoing restructuring processes at all stages in the food chain, may cause unique developments as far as quality management is concerned.

The aim of this paper is to identify the quality perception of the Polish operators in the dairy market and to find out which influence the chosen quality strategy exerts on the vertical co-ordination mechanism. In the first part of the paper, we present a brief review of the relevant theories. Since the Polish dairy market is dominated by co-operatives, we additionally review the general co-operative literature. The literature suggest that due to their complex governance structures co-ops may face significant hold-ups affecting quality control and management. Following the theoretical discussion, the second portion of the paper details the relevance of quality management thoughts for the Polish dairy cooperatives.

2. *Theoretical considerations*

What does the ‘new quality’ mean?

There were several severe food crises in the years prior to the BSE- and FMD- crises in the winter of 2000/01, e.g. the Coke-scandal in Belgium, the BSE-crisis in the UK, and the wine-scandal in Austria and Germany. However, the crisis in the winter of 2000/01 can be regarded as the straw that broke the camel’s back (Hanf/Hanf 2005). The growing concerns of consumers, producers and governments worldwide have influenced the political debate on food safety. In the European Union (EU) a variety of new standards have been set in order to ensure the demanded minimum level of food quality. The result of these developments is that legal quality requirements are becoming more stringent and comprehensive (i.e., covering more safety attributes), and food policy is becoming increasingly integrated across various sectors (Ugland/Veggeland, 2006).

With increasing knowledge and perception of risk, consumer demand for safety and a willingness to pay for it increases (Antle, 2001). At the same time, as incomes rise, consumers demand even more quality, including, besides safety, such attributes as nutritional value, product diversity and tightness of product specification. Providing credence attributes is becoming an integral and ubiquitous issue for business operators. Indeed, trust-based attributes are expanding and include, besides food safety and nutritional properties, different contextual product properties related to certain public goods or values, such as environmental justice or cultural (traditional) values, etc. (Allaire, 2004). Consumers are, however, not able or willing to intensively and fully ascertain the credence characteristics of food products. Thus, they look for signals to facilitate their buying decisions, e.g. a well-known brand or a certificate of quality, thereby motivating the participants of the food chain to take the appropriate measures and to meet the ‘new quality’ demand (Hanf/Pieniadz, 2006).

Through the expansion and deepening integration of the EU, the quality-based competition among business operators has intensified. On the one hand, the minimum quality standards of the EU force low-quality producers to raise their quality or drop out of the market (Hockmann/Pieniadz, 2006). On the other hand, the increasing demand for quality signals especially allows supermarkets and manufacturers of branded products to benefit from imposing voluntary, private quality and safety standards, some of which are even more stringent than similar governmental regulations. Hence, the use of private voluntary standards across food categories has been increasing in both long-standing EU members, as well as in transition countries (Swinnen, 2006; Spencer/Reardon, 2005). Fulponi (2006) argues that private standards will become even more prominent in upcoming years as we observe increased market concentration and buying power in the retail sector, as well as its integration with financial markets. Unnevehr et al. (1999) assert that since food safety and quality can be successfully managed using private standards, their diffusion will henceforth even reduce the need for direct legal regulations. Thus, in order to meet the demanded new quality, food processors and retailers will have to enact additional mechanisms and re-design their food chains to induce the incentive-compatible behaviour of upstream business operators. Hanf/Hanf (2005) concluded that these demands on quality lead to the conceptualisation of chain quality management concepts by combining these 'new quality' demands with general chain management concepts.

Verticalisation and chain quality management

Food supply chains can be characterised as pyramidal-hierarchical networks. Such networks have a strategic character, with the focal company being the core element. The focal company is the centralised decision-making unit and may be either the manufacturer or retailer (Jarillo 1988). Thus, the focal company determines the decisions of all network members, including the choice of measures to ensure the achievement of the super-ordinate network aims (Wildemann 1997). Efficiency gains, higher profits, and cost reductions are important reasons for building such networks – which can be called supply chain networks – with food quality being regarded as one of the most important. Allaire (2004) mentioned the “quality turn” as a main reason for the tendencies towards verticalisation in food chains worldwide. The consultancy KPMG (2000) characterises verticalisation as the building of vertically coordinated systems resulting in changing markets for ‘fast moving consumer goods’ (FMCG). Thus, vertically coordinated systems are understood as the exchange of goods not primarily conducted by market transactions. In other words, verticalisation means intensifying vertical relationships, which can take different forms of bilateral commitment between partnering firms based on implicit and explicit contracts. Generally, we can distinguish between two partnering types: strategic and operational partnering:

Strategic partnering is defined 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, p.550). The aim of strategic partnering is to improve or entirely alter a company’s competitive position through developing new products and technologies and by creating new 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” (ibid. p.550). Thus, an operational partnering strategy seeks to improve operational efficiency and effectiveness, especially by reducing transaction costs. Such orientation involves shorter time spans and less organisational resources. Therefore, operational partnership is much easier to implement (and also to reverse) than strategic partnership. In addition to such aspects of aligning interests, chain management has to consider aspects of coordination (Gulati et al., 2005). In their framework on chain management Hanf/Dautzenberg (2006) combined these considerations with the thought that networks consist of different levels,

namely firm, dyadic, and network levels. They point out that these three aspects have to be mirrored in the collective strategy¹ of a supply chain network.

Thus, if quality is the leading idea or strategy to be coordinated along the SCN, all members must share a homogeneous understanding of quality management, which provides the preconditions for the emergence of a collective strategy, and thus collective actions that address the chosen strategy. In this case, we expect a correlation between the chosen quality strategy and the design of the partnership. Therefore, the following assumption can be made in order to test it empirically in the second part of the study:

If a firm chooses a pure cost leadership strategy, we expect that this firm will produce products that solely meet the minimum quality requirements (EU/ governmental regulations). In this case, we expect that vertical exchange will take place by arm's-length transactions, meaning that vertical co-ordination is more or less done via the (spot) market. Thus, it will be sufficient for a cost-optimising firm to develop operational partnerships in both upstream and downstream stages. If a firm chooses the opposite strategy of product differentiation and quality attributes (especially trust elements) are chosen as the means of differentiation, we expect the firm to develop more sophisticated relationships. Yet we expect that the differentiated firms are more likely to develop strategic partnerships. In this case, vertical co-ordination can be regarded as highly cooperative or even vertically integrated.

Quality problems in co-operatives

In the previous section we argued that food quality is no longer the matter of a single firm, but instead the whole food chain has to work together in order to deliver the 'new quality'. However, Hanf/Schweickert (2003) as well as Hanf/Kühl (2005) mention that due to their organisational form, co-operatives face problems integrating themselves in supply chain networks. A major reason for this are the co-op's internal institutions governing the behavior of the co-op's members and affecting the co-op's ability to manage the quality of its products. Arguments for this are the following: In the context of increasing vertically co-ordinated agri-food systems, Sykuta/Cook (2001) showed that at the producer level, the most practical co-ordination mechanism is contracting. Because of their very own property rights structure, producer co-ops have some advantage compared to investor-owned firms. However, in addition to these benefits, they also face some problems. By using a property rights approach, Cook (1995) pointed out five general sets of problems: Free Riding Problems, Horizon Problems, Portfolio Problems, Control Problems and Influence Cost Problems. As Cook (1995) showed, these sets of problems constrict the various types of co-operatives (Sapiro I-Nourse II) differently. Combining a principal-agent approach with the concepts of opportunistic behaviour, conflicts of interest, asymmetric information and stochastic conditions, Eilers/Hanf (1999) show that it is not clear who is the principal and who is the agent, i.e., both the co-operatives and the members can be principals and agents. For this reason, neither leadership mechanisms nor selective terms of delivery can be enforced by the co-operatives, i.e., the members can deliver all the commodities which alternative dealers do not accept. Co-operatives that are to accept these commodities face the problem of adverse selection. Additionally, Fulton/Giannakas (2001) show that the cross-subsidisation and member heterogeneity in large centralised, multipurpose co-ops may lead to substantial financial pressures for the co-operative because members of such co-operatives do not see a strong connection between the success of the co-op and their own business. Furthermore, Karantininis/Zago (2001) showed, by applying a game theory model, that instead of selling their commodities to open co-ops, farmers would rather sell

¹ In general, collective strategies are defined as systematic approaches by collaborating organisations that are jointly developed and implemented (Astley/Fombrun 1983, Astley 1984, Bresser 1988, Bresser/Harl 1986, Carney 1987, Edström et al., 1984, Sjurts 2000).

them to investor-owned firms if they had the choice. Fulton (1995) concludes that if markets disappear as a result of an increased vertical co-ordination, co-operatives may also begin to disappear. Hendrikse/Bijman (2002) share this assessment if investment on the side of the processor or retailer becomes more important for the total chain value than the investments by the farmers. In an empirical survey, Schramm et al. (2006) evaluated German dairy co-ops' brands. Using institutional economic and behaviour approaches, they showed the strengths and weaknesses of co-ops' branding strategies. Even though they were able to locate different factors exerting influence on branding strategies, quality issues were of major importance – negatively as well as positively. Besides these disadvantages, Briscoe/Ward (2006) name some managerial advantages of co-ops, as far as small and medium-sized co-ops are considered; These include better communications with farmers, staff flexibility, easier (more efficient) control, hands-on management, greater motivation, and identification.

3. Quality management in Polish co-ops

Even though unbranded and branded products co-exist in the Polish dairy product market, an increase in market share of branded (higher quality) products is becoming evident. However, the majority of the branded products are produced by large companies. Particularly in the retailer sector, large (foreign-owned) retail chains are gaining market share. For these chains, it is typical to proliferate the food assortments, meaning that their suppliers are forced to produce more differentiated products. For the producing sector in Poland, it can be said that a consolidation is taking place; however, over 300 dairies still exist. The majority of these dairies are producer co-operatives with milk processing being their prime economic activity. Because of this, we have chosen co-ops as the unit of empirical investigation.

We surveyed 19 of the 22 largest Polish dairy cooperatives in February and March 2006. Roughly equal numbers of semi-structured interviews were conducted across the various hierarchical levels in the co-ops, including chief executive officers, quality managers, and supervisors in the marketing and supply departments. The sequence of the questioned representatives was the same for each co-op. The interviews were conducted by telephone and lasted between 20 and 40 minutes per respondent.² This technique made particular sense in view of the above-mentioned research questions: On the one hand, chain quality management as well as networks concern activities and processes that are challenging to quantify and may even be ambiguous or misunderstood. On the other hand, the topics are particularly sensitive in emerging markets. Moreover, in those markets there might be some unique and relevant developments which have to be first recognised, while giving the respondents some freedom to explore our general views. In the following, we elaborate on the relevance of the previously considered quality management thoughts based on the surveyed cooperatives.

General comments on dairy co-ops

Despite the fact that organisational capabilities in Polish agriculture remain relatively low, producers' cooperatives continue to be a significant part of Polish dairy processing. To some degree all cooperatives draw on the long history of cooperative thinking. Most of them were grounded in the 1920s and 1960s. According to the statements of the interviewed persons, cooperative values are coming increasingly under pressure. The challenges of maintaining a coherent socio-economic environment have been amplified by

² Additionally, some major investor-owned dairies were interviewed as well. In this case, only the quality managers were asked for their analytic expertise, allowing relative statements regarding various quality management issues in co-ops and investor-owned firms.

ongoing liberalisation, globalisation and standardisation, all of which change trade patterns for agricultural and food commodities and influence production costs and commodity prices. Similarly, the continuing expansion and deepening integration of the European Union, as well as the current reforms of the common market organisation for milk and milk products are redefining the challenges for operators in the European dairy market. Thus, for milk processors that decide to stay in the market, the issue is whether or not to adapt the current business strategy to the changing operating environment. The success of an enterprise not only depends on its ability to reconfigure the production system (technology, management) within the firm and improve the quality of inputs, but also to redesign its food chains, so as to efficiently produce the demanded quality and variety of milk products. In this context, co-ops face additional organisational problems that hamper their flexibility to make the needed adjustments. The complexity rises since the co-ops must meet the interest of their members while also satisfying the consumer. The member-driven orientation makes co-ops fundamentally different from investor-owned corporations in that they are compelled to look for quite stable markets, since they are not able to compete with more flexible and strictly profit-oriented private enterprises.

The interviews showed that on the one hand, all co-ops recognise the changing market requirements (demanded new quality) and understand quality to be an important action parameter for reaching the needs and wants of the consumers. This indicates that even for the Polish co-ops, food quality is more than plain food safety and the ability to continuously reproduce an *ex ante* defined set of attributes. On the other hand, the co-ops are also aware of the strong competition on the product (consumer) market and of being confronted by multiple problems with regard to their 'inherent characteristics'. One of the largest constraints seems to be the conflict between the co-ops' status (co-operative principles) and economic goals: For most of the investigated co-ops, 'success' means the degree to which the enterprise has achieved the targeted goals. Since co-ops target different social and economic goals and the decisions are made mostly on a consensus-driven basis, there are plenty of potential conflicts of interest and hold-ups in the decision-making process. For example, with regard to the quality issue, there are significant inherent frictions when selecting small dairy producers—members that deliver low quality raw materials. The co-ops feel, generally, to be disadvantaged by the organisational and management structure, as well as by the limited financial and qualified human resources that would significantly improve both the process and product quality. Some co-ops also mentioned restricted access to foreign capital and know-how as being their main competitive disadvantage in quality improvement. Indeed, investor-owned firms with foreign investments benefit from having better access to approved business concepts and quality assurance systems, as well as capital from the main company. In interviews, the representatives of the two firms with FDI mentioned that they had not noticed any additional costs regarding implementation of higher quality standards in the plant. The implementation of QMS was monitored by representatives of the main company, and the staff in the domestic sub-company was well advised and supported by special training with regard to quality issues. One of the co-op leaders mentioned that "the domestic dairies with FDI have just to copy the approved business concept and educate their staff on the costs of the mother company, whereas the co-ops have to be very 'innovative' while meeting the current market challenges and dealing with co-op specific constraints". The 'innovative' thinking refers, however, to finding a creative solution under the given circumstances, while imitating the marketing strategies of private and prospering companies.

The above-mentioned considerations reveal that the lack of investment is one of the crucial hurdles for those investigated co-ops that wish to adopt additional quality improvement instruments. Surveyed co-op representatives reported being sceptical regarding the benefits of the quality assurance systems prior to their implementation. In some cases, these doubts had postponed the decision to adopt. Once introduced (i.e., HACCAP prior to EU accession) the co-ops acknowledged many advantages, i.e., less variation in quality outputs,

better harmonisation of operational sequences, and less variability of staff skills while managing the quality.

Further, co-ops recognise some advantages as far as the relationship with their suppliers are considered: Producers tend to trust a cooperative more than (foreign) investor-owned companies. The surveyed representatives pointed out that a farmer is typically risk-averse and seeks stable, trust-based relationships and social acceptance, both of which he can enjoy as a member of a co-op. In most cases, these utilities outweigh pecuniary disadvantages, since most of the co-ops bid lower prices for raw milk. Additionally, their support as 'service providers' enables them to supply some services to the farmers independent of the government or other private services. Besides information transfers between the co-op and the farmers (consulting, choice of production techniques), co-ops offer their members credits or access to credits for investments in the growth and specialisation of the farms. These instruments increase producer loyalty and assure, at least, continuous access to raw materials. However, co-ops still face multiple conflicts when selecting quality suppliers (supplier=member). The organisational 'stickiness' in the selection process of quality producers impedes the manufacturing process and quality output and compels the co-ops to target markets for lower quality. Nevertheless, the co-ops strive to adjust to the market requirements and utilise various instruments to induce the incentive-compatible behaviour of upstream business operators. For example, co-ops use quality-dependent payment schemes to remunerate better raw milk quality. Additional provisions exist as well, including a price premium for extraordinary quality (super extra) and direct delivery for farms either approved by the veterinary bureau or which possess certain breeds of milk cows. All co-operatives pay a price premium on membership. Thus, payment schemes differ greatly between dairies. However, in all pricing mechanisms, the price increases as compliance with quality requirements set by the purchaser increases. Co-op representatives mentioned that the EU quality regulations have an immense 'educative' influence on the farmers with regard to quality improvements. On the other side, mandatory regulations take away a co-op's ability to select (passive selection). The co-ops expect some competitive advantages at the procurement stage due to the better 'access' to their local communities, in the middle-term.

Proposition: Cooperatives are disadvantaged in quality-based competition due to their lower flexibility and limited access to financial and qualified human resources. Thus, they are often imitators or choose generally stable markets for their proliferation.

Proposition: Cooperatives have some advantages over private firms at the procurement stage in the mid-term, owing to their local communities' attachment, and their potential of being a 'service provider' that enables them to supply services independent of the government or other private services.

The co-ops solution: How to be competitive

First Level: Market segmentation

Economies of scale have become a factor of considerable importance in the milk sector and have affected all stages and legal forms of enterprises in Europe. The (largest) Polish co-ops recognise the challenge and strive to expand in the milk market by applying various growth strategies. The most common strategy is internal growth via entering new (export) markets and market penetration with regard to FMCG such as UHT-milk. Moreover, well performing co-ops expand through mergers and acquisitions which, besides rapidly increasing revenue, allow them to utilise economies of scope, e.g. the transfer of capital, technology and know-how within the company, as well as synergies of using common brand names. We observe that all investigated co-ops modify their production profile, which leads to a kind of market segmentation and mitigates direct rivalry among firms. Basically, they move toward specialisation on either the white or yellow production line, or

they extend their production, offering highly diversified goods of both lines. The interviews indicate that firms use both cost-leadership, and to different degrees, product differentiation strategies. Product differentiation is important to all investigated co-ops, as they recognise the need to make products more attractive to the target market. However, differentiation takes various forms, from a simple modification to an existing product (a new flavour of yoghurt) to creating a new branded product in which factors other than price are taken into account by consumers (market segmentation).

Proposition: To overcome the intensive competition, co-ops modify their production profile, which leads to market segmentation.

Second Level: Choice of quality strategy:

The heterogeneity of the co-ops is even greater when comparing the chosen quality strategies. Co-ops which take the role of the focal firm in a dairy chain especially act to escape from price competition by setting themselves apart and bringing quality to a differentiating parameter. Investments in brand, reputation and reduction of information asymmetry about product quality (social marketing, TV spots, food exhibitions, etc.) are becoming a priority for this group. All of those co-ops use intensive ISO quality standards. Some of them also implemented voluntary ISO standards on environmental management and possess an adequate certificate integrating both systems, whereas the remaining manufacturers of branded products intend to implement them in the near future. The respondents of those co-ops stressed that the main incentive for implementing the voluntary environmental standards was to demonstrate their environmental concerns, and hence to increase their reputation and brand loyalty. Several dairies in those group additionally address region-specific credence attributes, such as cultural and traditional values of the area where the co-op is located, and social justice while stressing the importance of product purchase for employment in rural areas. In most cases this strategy leads to a kind of 'local patriotism' among consumers, as far as the purchase of the regional milk products is concerned. To stabilise their market shares and to protect their independence, the co-ops with a strong brand reject producing and selling their products under a private retailer's label. This premium-quality strategy, however, usually concerns the largest of the investigated co-ops, and thus seems to be a minority when all Polish co-ops are considered. On the other 'end' of the investigated firms are co-ops that utilise a strong cost-orientation for their competitive advantage. Cost leadership is achieved by economies of scale, thus producing basic products and improving the efficiency of all business operations is a priority for this group. In those groups there are usually no dominant standard-setting purchaser, thus the dairies have some freedom in their choice of quality strategies and measures to guarantee the effectiveness of the chosen strategy. Accordingly, those co-ops offer their products at the cheapest price (price leadership) while meeting just the minimum quality as demanded by the obligatory regulations. The representatives of those co-ops argued that there is so far no need to change this strategy, since there is still a profound group of low income consumers who demand their products, and hence enable attractive profits. Because the firms do not possess a strong brand, they use voluntary public quality certifications and labels to signal quality, such as "Q" (quality) and "Eco" (ecological), developed and assigned by the Polish Centre for Testing and Certification (PCBC). Some standards promote national food products of high and reliable quality, such as the "Try Fine Food" standards (PDZ) designed by the Polish Ministry of Agriculture and Rural Development. Representatives of the co-ops mentioned however, that they recognised that their products are currently threatened by the plurality of signs, which can sometimes even increase the uncertainty among consumers.

Between those two above-mentioned groups there are co-ops that are strongly dependent on direct purchasers. Usually these co-ops have no brand (or not a strong one) and regard the dominant purchaser as the standard-setting entities; they then adjust their quality strategy and management to the respective requirements.

If the focal company is a manufacturer requiring tightly-specified industrial products, the co-op has to adjust quality assurance systems to the specific requirements (i.e., unique chemical or physical parameters). Quality signals and voluntary quality systems seem to be irrelevant to those co-ops. Some FDI use the possibility of intra-industry trade based on the co-ops' supply, since the co-ops have better access to the local milk suppliers. On the other hand, the co-ops benefit from the financial support of the focal firm, while carrying out relation-specific investments. Joint investments first concerned quality improvements at the procurement stage, and then the adoption of new processing technologies. The adherence to specific requirements is ensured by close business-to-business (B2B) relations, including some knowledge-sharing routines and enhanced monitoring. Additionally, in such direct relationships, the threat of direct and strong sanctions (losing the focal purchaser) limits opportunistic behaviour and facilitates cooperative adaptation by the co-op. At the same time, the high intensity of unexpected controls and enhanced monitoring suggests that the focal firm either does not trust the partner or must steadily improve the knowledge about its capability, as well as the correctness of the process.

If a dairy sells its products to a retail chain and the retailer then sells them as proprietary private label products, the implementation of retailer-specific schemes will be required. Thus, the processors are voluntarily obligated to implement standards for auditing retailer-branded food products, such as IFS and BRC. Interestingly, the retailers are satisfied if those concepts are running but they do not need to be certified, which seems to be specific for an emerging market. In this case, the quality standards are used to coordinate pooled interdependencies. We found that focal firms prefer control-based relationships rather than trust-based ones to govern partnership behaviours and the maintenance of their specific requirements. In particular, retailers with strong bargaining power apply restrictive control mechanisms, even if the running quality concepts are certified. Adjustment to the retailer-specific requirements involves investment in specialised resources, which increases the co-ops' dependence on retailers. However, because IFS and BRC are widely used standards, the co-ops have formal access to alternative institutional customers on the national or international markets.

Proposition: Co-ops follow different quality strategies within the chosen production profile. Adoption of higher quality standards is an economic activity, guided by the co-op's profit expectations.

Third Level: Verticalisation:

The chosen quality strategy influences the vertical coordination mechanism along the dairy chain. In the next step we investigate the linkages between quality performance and the design and intensity of vertical relationships with the upstream and downstream stages by examining four groups identified in our data set. The main findings illustrates Scheme 1. The scheme was developed by type of dairy cooperative based on the chosen quality strategy and the dominant purchaser. The dominant purchaser was, in most cases, the focal and hence standard-setting unit exercising chain quality management. Thus, even if a co-op delivers its products to different purchasers, the dominant one determines the co-op's quality performance, and hence the design of the relationships with the upstream stages (suppliers). If a co-op is a manufacturer of branded products, it takes the position of a focal company itself. Producing and delivering quality products requires implementation of superior (or at least higher than average) quality management systems. However, we found some differences even between the quality producers.

④ Manufacturers of branded products have recognised that they must actively create their own distribution opportunities. For all channels – retail, wholesale, and export – they use medium- and long-term contracts which contain all sorts of details that address product quality matters. Thus, the co-ops control, to some extent, quality measurements that are external to the firm. However, despite reciprocal information exchange and ongoing negotiations, these relationships still have an operational character (\leftrightarrow). However, the co-

ops increasingly use partnering mechanisms that are more strategic in nature, so marketing information such as point-of-sale data is exchanged. The co-marketing is particularly intensive in partnerships with retail chains, because it is based on ongoing negotiations and adjustments addressing sales strategies, promotions, and pricing behaviour (\leftrightarrow). Typically, this leads to complex reciprocal interdependencies, which demand well-defined organisational principles and a certain level of management skills to govern the relationships. Such relation-specific systems seem to be unique for an individual chain of branded products manufacturer.

Interaction at the procurement stage can also be described as intensive, especially with the larger and specialised farmers (\leftrightarrow). Using incentives to upgrade the quality of raw milk, the co-ops exert a firm boundary for the overlapping quality scheme. Some of the actions result from the implementation of ISO quality standards, which require quality objectives to be included in the quality policy and to be leveraged to upstream stages. Additionally, the co-ops provide intensive consulting assistance and herd management for their members. One co-op even provided business angles as an alternative know-how source (technology transfer) as early as at the beginning of the 1990s. Overall, we think that in this case, we can speak not only from a chain quality concept; instead, it is a strategic one.

②&③ When the focal company is either a manufacturer or branded retailer, we found that purchasers prefer control-based relationships rather than trust-based ones to govern partnership behaviours and the maintenance of their specific requirements (\rightarrow). In particular, retailers with strong bargaining power apply restrictive control mechanisms, even if the running quality concepts are certified. Adjustment to the retailer-specific requirements involves investment in specialised resources, which increases the co-ops' dependence on the retailers. However, because IFS and BRC are widely-used standards, the co-ops have formal access to alternative institutional customers on the national or international markets. Contracts and managerial discretion are used to meet sequential interdependencies, with the contracts containing specifics on quality and payment. As long as these specifics are met, the duration is prolonged. Additionally, we found some reciprocal interdependencies among the partners in B2B relationships between the co-ops and the industrial purchaser. Overall, the relationships between the focal companies and the dairies is very intense. Therefore, this type of partnering is more strategic than operational. Regarding the relationship between co-ops and their members, we found that co-ops encourage growth strategies through intensive consulting assistance, which aims to select larger farms (\rightarrow), hence, they use economies of scale. Overall, we conclude that supply chain networks are established and chain quality management is exercised. However, even though the partnering can be described as more strategic in nature, there is a lack of a collective quality strategy. Thus, we would classify the paradigm as an operational chain quality management. Because more and more retailers are bringing their proprietary private label products on the market, there is increasing price competition among the products. For the concerned co-ops, this means that they face strong pressure on the costs, which precludes resource allocation to more sophisticated quality management systems.

① Because of the strong cost orientation of the basic product producers, it is not surprising that those processors apply mandatory standards and schemes and restrict their relationships with suppliers to the basic commitments and principals as regulated in the cooperatives' statute (\rightarrow). Nevertheless, the co-ops' relationships seem to be better developed at the procurement stage than at the distribution stage. We could identify operational partnerships between the co-ops and their milk suppliers and some dyadic actions addressing the chosen quality strategy at this stage, but there is still a missing recognition of similar interests and initiatives to explore operational advantages in relationships with their institutional customers. Further development of retailers and wholesalers with strong bargaining power will force the dairies either to join their SCN or take the role of a focal company and strengthen their brand. Independent of that, the dairy must first create its supply chain network and develop a chain quality management.

Proposition: The challenge of the focal firm is to choose the quality approach that best fits the overall network's aims as well as its performance.

Proposition: The chosen quality strategy determines the design of the vertical co-ordination mechanism. The higher the requirements of the final product, the further quality management systems go beyond a firm's boundaries and the higher is the intensity of the relationships between the intermediary stages in the dairy chain.

4. Final remarks

Food today is perceived as a complex bundle of characteristics, with an increasing level of importance placed on credence attributes relating to product and methods of production (e.g. environmental friendliness). Food processors and retailers must re-design their food chains in such a way that all stages of the food chain are involved to meet the demanded 'new quality'. Therefore, the coordination mechanism of the existing food chain has to be altered, because spot market transactions are unable to properly coordinate the exchange of credence attributes; they must be substituted by transactions in vertically coordinated chain organisations. Such chain organisations are either hybrids or vertically integrated firms. For the agro-food business, there is evidence that the majority of these chain systems are organised as vertical networks i.e., supply chain networks. Chain management must incorporate the relationships and interdependencies of the member firms, as well as problems arising at the firm level, the dyadic level, and the network level. Applying these thoughts on quality issues, it becomes evident that we have to differentiate between operative chain quality management and strategic chain quality management.

The example of Polish dairy co-operatives provides new insights into quality management issues faced by cooperatives. First, our findings indicate that activities related to quality improvements are generally aligned with current market opportunities for optimal enterprise performance. On the one hand, co-ops recognise that they must deliver safe and reliable food and differentiate their products, at least in a partial way, to make them more attractive to the consumer. This indicates that even for the co-ops, food quality is more than plain food safety and the ability to continuously reproduce an *ex ante* defined set of attributes. On the other hand, co-ops face various problems, the largest of them being the conflict between the co-ops' principles and economic goals and limited financial and qualified human resources that would significantly improve both process and product quality. The co-ops' specific problems compel them to modify their production profile and usually to tap markets for basic products, since they are hardly able to compete with more flexible and strictly profit-oriented private enterprises on markets for high-value added products. However, our study reveals that there are some exceptions to this general observation, especially when examining the co-ops' chosen quality strategy and the design of the quality management systems.

Overall, we conclude that in most cases, supply chain networks are established and chain quality management is exercised. However, this is only the case if there is a focal actor that influences its network structure. The results show that retail chains and industrial purchasers with foreign investment and strong bargaining power usually take the position of the focal firm in the SCN. In those cases, strategic partnering between the individual chain stages dominates. However, because there is a lack of a collective quality strategy overlapping all actors, quality management initiatives are still operational in this case. There are still some Polish co-operative dairies that are not embedded in any SCN. These concern processors of non-branded goods or those with weak brands that sell their products to purchasers without a focal position. Because there is no powerful focal firm in the chain, no managerial discretion can be exerted and no chain quality management concepts can be installed. Thus, we could only identify operational partnerships between the co-ops and their milk suppliers and some dyadic actions addressing the chosen quality strategy at the procurement stage. In contrast, at the distribution stage we observed that the partners do not

share homogenous interests regarding quality issues; there is even a lack of dyadic initiatives aimed at exploring the operational advantages of the cooperation. Our empirical results show profound diversity regarding quality management approaches in the Polish milk supply chains. However, one thing is clear: The chosen quality strategy determines the design of the vertical coordination mechanism. Thus, the higher the product requirements, the further quality management systems go beyond a firm's boundaries and the stronger is the shift from operational towards strategic quality management.

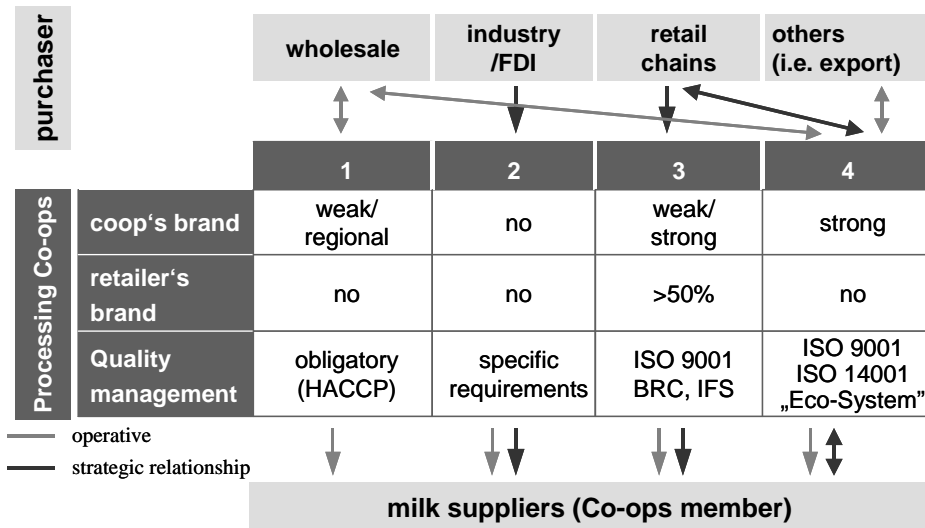
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Diagram

Scheme 1: Typology of Polish dairy chains: Linkages between the chosen quality strategy and the design of the relationships between a cooperative and its upstream and downstream stages.



Contact information

Agata Pieniadz
 Leibniz Institute of Agricultural Development in Central and Eastern Europe
 Theodor-Lieser-Str.2
 06120 Halle (Saale), Germany

Phone: +49 - 0345 29 28 226
 Fax: +49 - 0345 29 28 299
 Email: pieniadz@iamo.de