



The role of cooperatives in food safety management of fresh produce chains: Case studies in four strawberry cooperatives



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ABSTRACT

Recent outbreaks with fresh produce have raised questions regarding management of quality and safety in the complex supply chains, where cooperatives play a central role. The overall objective of this article was to investigate the role of cooperatives in food quality and safety management in the fresh produce chain, focussing on the food safety management systems implemented on the farms. More specifically, we raise the question how a more market-like or a more hierarchy-like governance of transactions via cooperatives affect the quality and safety management system of the members. The research employed case studies in four cooperatives in Belgium and the Netherlands, each with different size and per cent of contractual sales. Data was collected with a diagnostic tool for assessment of food safety management systems (FSMS) on the farms, and semi-structured interviews with the quality assurance managers of the cooperative firms. Twenty-eight strawberry farms were assessed with the diagnostic tool, seven per each cooperative. Cooperatives play a double role in managing quality and safety in the food supply chain. They are responsible for the supply chain management, including tactical decisions about coordination of quality and safety requirements between customers, cooperative firms and their farmers. At the same time, they are selling the products of their members and make strategic decisions about the governance of transactions in the supply chain, which ultimately may have an impact on the supply chain management and the FSMS on the farms. Farmers in cooperatives with more hierarchical relationships showed better operation of control activities (score 3), and advanced assurance activities at score 4 (advanced level), more science-based, adapted and tested for their effectiveness. This was associated with more effort put in supply chain management by the cooperative to support collaboration and coordination in the chain. However, the largest cooperative had moderate scores for several key control functions, suggesting that large cooperatives with complex business functions may suffer from lower commitment of members, leading to lower FSMS performance at farms.

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1. Introduction

Each company in the food chain needs to implement a food safety management system, and it is a legal requirement in many parts of the world, for instance within the European Union (EC, 2002). Food safety is considered as one of the aspects of food quality, and a food safety management system is a part of the overall quality management system of the company (Luning & Marcelis, 2009a). Quality management systems encompass activities of com-

panies aimed to direct, control and coordinate quality, including formulating policy, setting objectives, planning, controlling, assuring and improving (Luning & Marcelis, 2007; Luning & Marcelis, 2009b). Over the last years, however, the focus of quality management is moving from intra-company to inter-company within a supply chain (Kaynak & Hartley, 2008). This is especially important in fresh produce chains due to the perishability of the products, global sourcing and long supply chains (Blackburn & Scudder, 2009; Rong, Akkerman, & Grunow, 2011). Recently, studies have begun to focus on the alignment between supply chain governance structures and food quality assurance schemes (Trienekens & Wognum, 2013; Wever, Wognum, Trienekens, & Omta, 2010).

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However, to our best knowledge insights are lacking about the influence of supply chain governance on the food safety management systems implemented at farm level.

From a transaction cost economics perspective, supply chain governance structures differ in their level of coordination, ranging from market-based to hierarchy based structures (Raynaud, Sauvee, & Valceschini, 2005). Market-based refers to spot market, where goods are sold and delivered immediately (for instance via an auction where a clock sets the price) through contracts which can be verbal, formal or equity-based. In hierarchy-based structures, transactions are controlled administratively. Full coordination on product, transport and other requirements can be realized in hierarchy-based structures by defining requirements in contracts, while spot market is commonly anonymous and coordination is limited. The auction is a form of a spot market during at which the auctioneer begins with a high asking price, which is lowered on a clock until some participant is willing to accept the auctioneer's price, or the minimum acceptable price is reached (McAfee, Dinesh Satam, McMillan, & Dinesh, 1987).

The farmer-owned marketing cooperative is a governance structure that coordinates the transactions in many European fresh produce supply chains (Bijman et al., 2012; Hendrikse & Bijman, 2002). Cooperatives, however, differ greatly in the extent to which they apply more market-based versus more contract-based governance of the transactional relationships with their members. According to Ménard (2004, 2007), a cooperative is a hybrid governance form, as it combines pooling of resources, coordination through contracts and combining competition and cooperation. Chaddad (2012) has further elaborated on this conceptualization of the cooperative as a hybrid governance structure, emphasizing that cooperatives use both market-like and hierarchy-like mechanisms of governance. In other words, the relationship between the farmer-member and the cooperative firm is partly market-based and partly contract-based.

The impact of the cooperative governance structure on food quality and safety assurance is an on-going debate. Several studies showed that cooperatives provide more support activities to their members and therefore deliver better and more uniform quality than investor-owned companies (Cechin, Bijman, Pascucci, Zylbersztajn, & Omta, 2013; Hoffmann, 2005). Others, however, claim that members of cooperatives produce lower quality compared to farmers delivering to non-cooperative buyers (Pennerstorfer & Weiss, 2013). The latter studies have argued that the dispersed ownership and democratic decision-making structures of cooperatives lead to low incentives to increase quality. In this study we are not so much interested in the ownership structure, but in the governance of the transaction between members and their cooperative. More specifically, we raise the question how a more market-like or a more hierarchy-like governance of transactions affects the quality and safety management systems of the members. The latter can thereby affect the quality and safety of produce. The overall objective of this article is to investigate the role of cooperatives in food quality and safety management in the fresh produce chain, focussing on the food safety management system (FSMS) implemented on the farms.

2. Theoretical foundation

Food quality and safety management are among the most challenging functions of marketing cooperatives, as these organisations need to work in the interests of their members as well as meet the stringent requirements of wholesalers and retailers. To achieve this, not only the cooperative firm but also the cooperative members (the farmers) need to implement quality management systems (Fig. 1, operational decisions level). Within such quality management system, a particular part that is aimed at controlling and as-

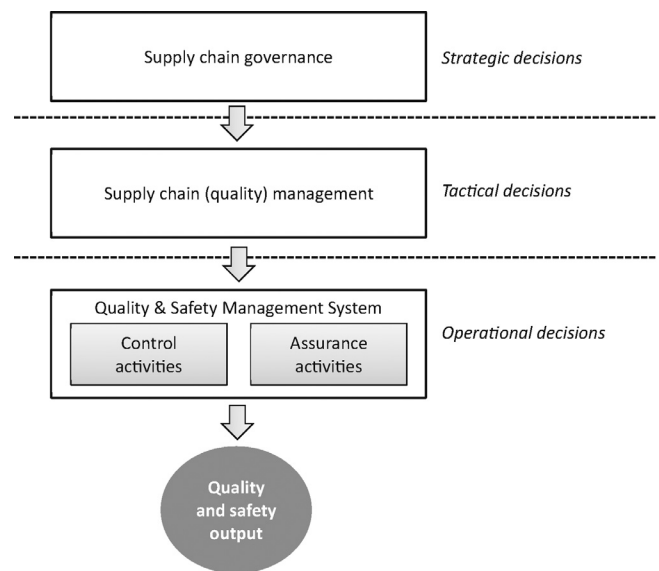


Fig. 1. Key concepts in the study and their interrelatedness in view of the quality management decisions taken in a company.

suming safety is called a food safety management system (FSMS) (Luning, Bango, Kussaga, Rovira, & Marcelis, 2008, 2009). Quality and safety management systems are supporting the operational decisions on the farms or in the companies by monitoring and controlling food quality and safety and by providing assurance (Luning et al., 2009). Furthermore, to answer the market requirements and to realise the demanded quantity and quality (including safety), cooperatives apply supply chain management practices (Fig. 1; tactical decisions level) to coordinate production, processing and distribution activities with different steps of the supply chain (Doukidis, Matopoulos, Vlachopoulou, Manthou, & Manos, 2007; Fish, 2011). This, for instance, may involve tactical decisions about the choice of quality assurance standards in the supply chain or type of logistics (Wever et al., 2010). Supply chain management is affected by the strategic decisions taken about the governance and types of transactions in the supply chain (Fig. 1; strategic decisions level; Richey, Roath, Whipple, & Fawcett, 2010). Fig. 1 represents the hypothesised interrelations among these three levels of decision-making, which are elaborated in the following sections.

2.1. Food quality and safety management systems

Quality management systems represent all the activities used to direct, control and coordinate quality in a company, including the organisational structure, responsibilities, processes, procedures, and resources that facilitate the achievement of quality management. These systems are the result of translating requirements from the market and regulatory environment into the specific production activities and organisational structures of the company (Luning & Marcelis, 2009b). These requirements can be put by public standards or recommendations (like code of practice according to Codex Alimentarius). Furthermore, private stakeholders in the fresh supply chain, such as retailers, can also demand certification against private standards (e.g. GlobalGAP, Tesco's Nurture) (Kirezieva et al., 2015).

2.2. Supply chain management

Quality management systems can be influenced by the overall supply chain management of the company, which is aimed at coordinating activities with suppliers and customers and to achieve

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