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**VALUE CHAIN ANALYSIS FOR
ORGANIC MILK IN FLANDERS**

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Bram Pauwelyn

onder leiding van

Prof. dr. X. Gellynck

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ABSTRACT

As competition more and more involves the entire value chains, close collaboration among all chain members becomes increasingly important in order to reach higher levels of value chain performance (VCP). Emerging markets of the organic food sector are typically suffering from inefficiencies and ineffectiveness which results in mismatches between supply and demand in the supply chain. This makes them a suitable study object to explore attributes that could contribute to higher value chain integration (VCI). For this study, the organic dairy sector in Flanders was chosen as focal chain.

As a first step of the study, we mapped the Flemish organic dairy chain to illustrate its limited scope as only 18 farmers were active in this sector. 17 of them were member of Biemelk Vlaanderen, a cooperative that functions as the link between primary production and processing and marketing of milk. This producer cooperative protects farmers' interests, mainly pursuing higher profit margins at farm level. Organic dairy products in Flanders are mainly sold by big mainstream retailers and health food shops, reaching only a very limited part of the Flemish consumers.

Based on scientific literature regarding value chain analyses and the theoretical framework, three conceptual value chain subjects contributing to VCI were proposed. Using a case study approach, we explored the influence of these on VCI and consequently of VCI on VCP.

Firstly, 'goal alignment' appeared to be a main prerequisite for close collaboration among chain partners. Nevertheless, in our study we found that all interrogated chain actors were pursuing different goals hampering higher levels of VCI. Farmers also indicated profit and risk to be unequally shared in favor of downstream actors, while processors stated to earn a fair part of total chain revenues. According to us, the cooperative should act as a negotiator in aligning all chain actors' goals by sharing the same core values and mission.

Secondly, we concluded hybrid 'governance structures', as in practice in the studied chain, are most suitable for organic chains. Spot markets are associated with too much uncertainty, while strict vertical integration would harm farmers' independence. Hence, an inverse U-shaped relationship was found between the level of governance structure formalization and VCI.

Thirdly, despite the fact that chain actors generally seemed satisfied about the level of 'information sharing', insufficient qualitative and reciprocal communication happened on chain level, especially towards consumers. Knowledge sharing could be considered as important in achieving VCI. However, in the studied chain it seemed better to leverage this correlation reversely using close collaboration as an enabler for better chain communication, which in turn could improve again VCI.

Finally, VCI was found to have a strong positive influence on VCP. The Flemish organic dairy sector could benefit strongly from this relationship as until now their limited scope hampered the chain's well-functioning. Due to close collaboration among chain members with truly strategic chain partners, fostered by the cooperative, the essential sector growth could be achieved providing the solution for the high logistic costs and low profit margins for farmers.

SAMENVATTING

Een nauwe samenwerking tussen alle ketenpartners wordt steeds belangrijker om een hogere ketenperformantie (VCP) te bereiken aangezien er steeds meer onderlinge competitie optreedt tussen ganse ketens. Groeiende markten zoals de biologische voedingssector lijden typisch onder een inefficiënte en ineffectieve ketenwerking wat resulteert in een gebrekkige afstemming van vraag en aanbod. Dit zorgt ervoor dat dit soort ketens een ideaal studieobject vormen om na te gaan welke kenmerken kunnen bijdragen tot een betere geïntegreerde keten (VCI). Voor deze studie werd gekozen voor de Vlaamse biologische zuivelketen.

Vooreerst werd deze keten volledig in kaart gebracht waarbij vooral zijn beperkte omvang opvalt aangezien slechts 18 biologische melkveehouders in Vlaanderen actief zijn. Hiervan zijn er 17 verenigd in een coöperatieve, Biomelk Vlaanderen, dat de link vormt tussen de primaire producent en de verwerkers en verkoop. De coöperatieve verdedigt de belangen van de landbouwers wat voornamelijk neerkomt op het streven naar hogere winstmarges op boerderijniveau. Biologische zuivelproducten worden in Vlaanderen vooral verkocht door grote retailers en natuurvoedingswinkels en worden slechts door een zeer beperkt deel van de Vlamingen geconsumeerd.

Gebaseerd op wetenschappelijke literatuur omtrent ketenanalyses en het opgestelde theoretische framework, werden drie conceptuele keteneigenschappen vooropgesteld die aan VCI zouden bijdragen. Via een case study-aanpak werd de invloed van deze eigenschappen op VCI verder onderzocht en uiteindelijk ook de invloed van VCI op VCP.

Als eerste leek 'het afstemmen van bedrijfsdoelstellingen' een basisvoorwaarde voor een nauwe ketensamenwerking. Toch zagen we in onze studie dat de ketenpartners andere doelen nastreefden ten koste van VCI. Landbouwers gaven ook aan dat winsten en risico's oneerlijk verdeeld zijn in het voordeel van verdere ketenpartners, terwijl verwerkers wel dachten een eerlijk deel van de winst op te strijken. De coöperatieve moet hierin volgens ons als moderator optreden om alle doelstellingen op elkaar af te stemmen door gemeenschappelijke waarden en visie voorop te stellen.

Ten tweede concludeerden we dat hybride 'governance structuren', zoals het geval in deze keten, het meest geschikt lijken voor biologische voedingsketens. Afzonderlijke transacties creëren te veel onzekerheid, terwijl een stricte verticale integratie de landbouwers hun onafhankelijkheid te zeer zou beperken. We kunnen besluiten dat er een omgekeerd U-vormige relatie bestaat tussen de mate van formalisatie van de governance structuur en VCI.

Desondanks het feit dat ketenpartners in het algemeen tevreden waren over het 'delen van informatie', stelden we als derde punt toch onvoldoende kwalitatieve en wederzijdse ketenwijde communicatie vast, vooral naar de consument toe. Kennisverspreiding kan worden beschouwd als een belangrijke voorwaarde voor VCI. In deze keten bleek echter beter de omgekeerde relatie te worden gebruikt waarbij een nauwe samenwerking zou moeten leiden tot een betere communicatie.

Tot slot konden we besluiten dat VCI een sterk positieve invloed heeft op VCP. De Vlaamse biologische melkketen zou in sterke mate van deze relatie kunnen profiteren aangezien tot nu hun beperkte omvang de werking van de keten had bemoeilijkt. Dankzij een nauwe verticale samenwerking met strategische partners, gecoördineerd door de coöperatieve, zou de noodzakelijke groei van de keten kunnen worden bereikt. Het zou een oplossing bieden voor de hoge logistieke kosten en lage winstmarges voor de landbouwers.

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LIST OF ABBREVIATIONS

BMV	BioMelk Vlaanderen
IT	Information Technology
RBV	Resource Based View
SSP	Strategy-Structure-Performance
TCE	Transaction Costs Economics
VCI	Value Chain Integration
VCP	Value Chain Performance

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CHAPTER 1. INTRODUCTION

1.1. General introduction

Organic food is more and more trending nowadays, caused by consumers' increasing interest in environmental issues and hence sustainable agriculture. Offering these products to consumers implies that entire organic supply chains should be set up tracking back from retailer over processor till farmer. However, since these value chains are still rather new, no real long-term relationships could yet been established among chain partners. Nevertheless, economic competition increasingly stresses the importance of the well-functioning of the entire supply chain, so proper supply chain management became a major source of competitive advantage. Regarding their novel character, organic agri-food chains seemed very suitable in exploring how value chains could further improve their performance by pursuing a closer chain collaboration.

In Chapter 1, a general introduction is given concerning organic agriculture and more specifically organic milk production in Flanders. Subsequently, gaps in organic food supply chains and value chain research are explored, justifying our research topic.

Chapter 2 firstly provides a theoretical background concerning value chains and value chain analysis where the dimensions of a value chain and ultimately value chain mapping and upgrading are clarified. Next, an extensive explanation is given of the two main concepts of this study: value chain integration (VCI) and value chain performance (VCP). Based on the theoretical framework, four research questions were proposed. They are summarized in the conceptual framework, being the basis of the study.

The research methodology in Chapter 3 explains the case study approach implemented in this study and specifies which chain actors were selected to complete the questionnaire.

The first part of Chapter 4 clarifies the flowchart of the Flemish organic dairy chain as a result of the mapping procedure. In the second part, we display and discuss the results as answered by the respondents in the questionnaires. This is accompanied by additional remarks obtained during further in-depth interviews and data found in scientific literature. By doing so, we examined the five conceptual subjects and their relationships as stated in the research questions.

Chapter 5 explores to what extent we could confirm the proposed research questions and summarizes this in some general conclusions. Finally, the limitations of this study are mentioned together with recommended future research about this topic.

1.2. Organic agriculture

Organic agriculture could be defined as a production system sustaining health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic farming combines tradition, innovation and science to benefit the shared environment, promote fair relationships and a good quality of life for all people involved (IFOAM, 2010). To achieve this, organic agriculture relies on some basic practices such as a wide crop rotation, no or restricted use of pesticides, mineral fertilizers, antibiotics and food additives, no use of genetic modified organisms and appropriate animal husbandry practices ensuring animal welfare. However, organic farming should be seen as a part of a larger organic supply chain, comprising feed production but also food processing, distribution and retailing (EU, 2014).

Organic products are always produced, processed, distributed, labelled and controlled according to very strict rules imposed by the EU in the basic Council Regulation on organic agriculture (EU No 834/2007) and its later adaptations. Only when official certification bodies declare compliance with this legislation, the European organic logo may be used (EU, 2014).

Aertsens (2011) stated that the organic food sector is an emerging market because (1) this market has a lot of growth potential as it is still relatively small in comparison with the conventional food market (e.g. in 2011 the organic area represented only 5.31% of total used agricultural area in the EU; in Flanders this was only 0.8%) (Samborski et al., 2014). (2) The European and Flemish policies and legislation about organic agriculture keep on changing. (3) Demand as well as supply has been growing fast last decades, as shown in Figure 1 for the EU from 1985 till 2008. Even after 2008, it continued increasing but at a lower trend (2008: +13% vs. 2012: +6%) which could be explained by the declining amount of area in the transition period. The total organic agricultural area in the EU in 2012 was around 10 million hectares. The European countries having the highest shares of organic agriculture are Liechtenstein, Austria, Estonia and Sweden (Willer and Lernoud, 2014). In Flanders, the organic area increased between 2008 and 2012 to 5065 ha (+44.6%), inducing an increase in market share of organic food products to 1.6% (+24.6%) (Samborski et al., 2014).

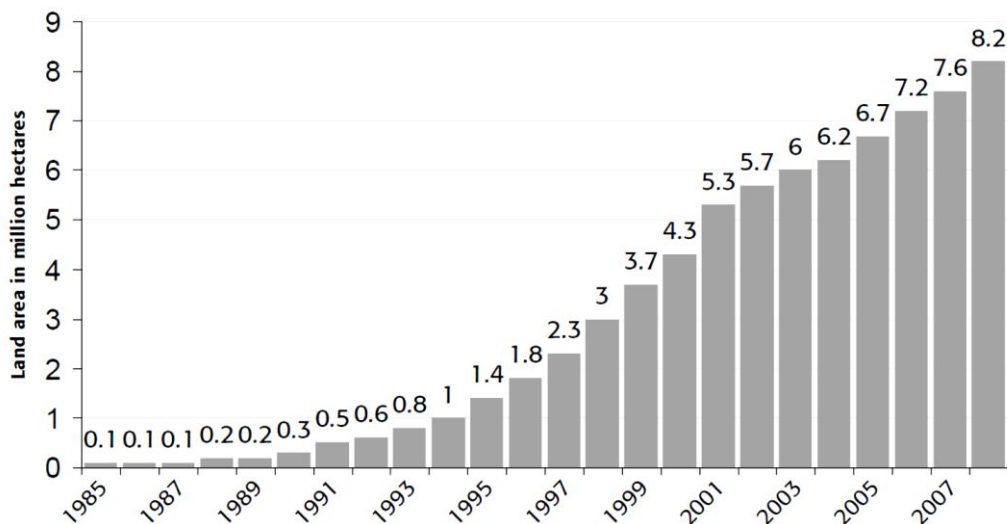


Figure 1: Evolution of the organic area in the EU (1985-2008) (Source: Willer and Kilcher, 2010).

1.3. Organic milk production

The production of organic milk in the EU is mainly located in Austria and Denmark. In 2010, only 1.1% of the total milk production in Flanders was produced in an organic way, representing around 6 million liters (Verbeke, 2012). The total amount of organic dairy cattle in Flanders could be seen as relatively constant, varying around 1200 cows (AMS, 2014) or 0.4% of all Flemish dairy cattle (Samborski and Van Bellegem, 2013). Farmers normally get a price premium for their organic milk to compensate for the extra costs, which always varies around an average of 5 euro/100 liter (Verbeke, 2012). Within the Flemish organic market, dairy products in 2013 accounted for 21% of the sales, representing 54 million euros (+3.8% in comparison with 2012) (Samborski et al., 2014).

Based on BioForumVlaanderen (2013), we discuss some of the main principles of organic animal production. Firstly, animals should originate from an organic farm and indigenous breeds with natural reproduction are preferred. Next, dairy cattle feed should contain minimally 60% organic roughage, which is mainly produced on the farm itself according to the rules of organic crop production. Also very important is the land-based principle, meaning the density of grazing animals is restricted to prevent over-fertilization (e.g. max 2 dairy cows/ha). Housing of the animals should meet biological and ethological requirements about space (6 m²/dairy cow) and clean air; stanchion barns or permanent housing are not allowed. Animal health should be maintained through prevention of diseases since the use of antibiotics is only allowed in exceptional cases. Finally, organic and conventional animals may never be kept together.

1.4. Research justification

1.4.1. Gaps in organic food supply chains

Reviewing scientific literature, several gaps in the effectiveness and efficiency of organic food supply chains could be detected. Baecke et al. (2002) concluded that it is difficult for actors in organic chains, characterized by high risk and uncertainty, to find and trust each other. Although provided that more resources are used to strengthen the organic chain, these authors stated it has a lot of possibilities. The non-optimal working of the supply chain implies supply does not satisfy demand in terms of price-quality ratio, availability and diversity of products (Kottila et al., 2005).

Because organic farming is small scale and rather fragmented, transaction costs associated with it are typically larger than those of conventional farming. Organic prices also differ more between farmers compared with the conventional market due to great differences in farmers' access to sales channels (Offermann and Nieberg, 2000).

Transparency, good communication and supporting relationships are crucial in organic agriculture because this is an information intensive sector. However, these mechanisms appeared to be missing in the past, impeding the adoption of organic farming (Baecke et al., 2002). Lack of knowledge and widespread misconceptions about organic products by all chain actors hinder the well-functioning of the chain (Aertsens, 2011).

This lack of transparency and communication, together with long conversion periods, causes organic markets to suffer from boom and bust cycles. This implies supply and demand are not always aligned, resulting in extra uncertainty and hampering a smooth market growth (Aertsens, 2011). This cyclic pattern could also be seen extensively in the Flemish organic milk market since periods of excesses alternate with periods of shortages. In the past demand was larger than supply in Flanders (Aertsens, 2011), but since the beginning of 2012 the Flemish organic milk production is under pressure because lots of British and French farmers switched from conventional to organic farming. Therefore, there was an increase in milk import from the UK while export from Flanders to France hampered (Verbeke, 2012). On the other hand, Verbeke (2011) concluded that due to a raising European demand and a stagnating supply, opportunities will occur for Flemish organic dairy farmers.

All these factors of a suboptimal supply organization lead to high price differentials compared with conventional food products, impeding the potential growth of the organic food market. This suggests that improved organic supply chains would result in decreasing consumer prices, closing consumers' attitude-behavior gap and thus enlarging adoption by consumers (Aertsens, 2011).

A demand higher than supply, generally the case for the organic market during the past decades, does not only imply missed chances but could even cause marketing problems for domestic organic farmers. Processors and/or retailers are forced to act with foreign organic actors, in the long term neglecting domestic producers meaning the latter have to sell their products as conventional products (Baecke et al., 2002). These authors stress the importance of a cost-effective supply chain for organic farmers to be competitive (i.e. with low transaction costs, easy access to information, more trust...). These conditions could be set more easily when more farmers would adopt the principles of organic agriculture; however, at the same time, the absence of these conditions thwart massive adoption (Baecke et al., 2002).

Kottila et al. (2005) summarized the problems in organic food chains as such: imbalance between supply and demand, high operational costs, lack of cooperation between chain actors, incompatibility of goals, lack of information flow and poor supply reliability. These authors therefore stated research is needed to encourage stronger collaboration between organic chain actors.

1.4.2. Gaps in value chain research

Nowadays, agreement exists about shifting from competition between companies to competition between supply chains (Molnar, 2010) and from internal self-efficiency to value chain efficiency (Olhager and Selldin, 2004). Customers' present requirements about consistent and on-time delivery demand for some kind of integration within these supply chains to win the competition (Mentzer et al., 2001). Previous studies already identified several factors enhancing or inhibiting integration (e.g. Fawcett and Magnan, 2002, Pagell, 2004). However, no consensus exists about how exactly value chain integration can be measured, mainly resulting from the many different meanings given to the term "integration" (Mentzer et al., 2001, Pagell, 2004, Fabbe-Costes and Jahre, 2008). Fabbe-Costes and Jahre (2008) mentioned the need for more understanding in the concept of integration and its dimensions and implications.

Secondly, Fabbe-Costes and Jahre (2008) concluded from their review that various researchers agreed that more integration would lead to better performance, though not all studies found this to be confirmed. According to them, this ambiguity mainly originates from the fact that different studies used different performance concepts. Next, they also concluded many studies agreed with 'the more the better', but only a very few could really prove this relationship. This implies that the impact of integration on chain performance needs to be further investigated, as mentioned by many authors (e.g. Olhager and Selldin, 2004, Fabbe-Costes and Jahre, 2008).

Next, most studies discussing supply chain analyses focus on the performance of individual firms within a supply chain. Only a few investigated the performance on dyadic level (i.e. between two firms). However, there is a need to look beyond this dyadic level and to focus on the real level of supply chain with a minimum of three connected firms performing together (Molnar, 2010). Despite the fact that many agreed with this statement, only a very few studies really addressed the triadic level (Fabbe-Costes and Jahre, 2008). Kotilla and Rönni (2008) stated that also for studies concerning organic food markets, research on the level of the complete chain was hardly done before. Moreover, research on corporate governance was done frequently before, while supply chain governance is a topic that is hardly investigated (Crişan et al., 2011)

Furthermore, most studies addressing the supply chain level only collected data from one firm of the triadic: the focal company (Molnar, 2010). Since supply chain management is a complex matter, it would be better to collect data from a minimum of three firms within the supply chain, asking each actor questions about their upstream and downstream partners (Spekman et al., 1998).

These factors, together with those mentioned above about gaps in organic supply chains (see 1.4.1), explain why research about the value chain of organic farming could be interesting. Despite many agreed with this statement, most studies investigating organic markets approached it from the perspective of one actor only (farmers or consumers), leaving the whole chain perspective unexamined (Kotilla, 2010). The choice for the Flemish organic dairy chain in particular could be justified when you know that an attempt to set up a cooperative for the organic milk production in Flanders already failed in the past because they were not able to match supply and demand in the market as a consequence of a lack of chain collaboration (Aertsens, 2011).

CHAPTER 2. THEORETICAL BACKGROUND

2.1. Value chain

The value chain concept is a common used framework in research nowadays, but its origin dates back to the French ‘filière concept’ of the 1960s (Faße et al., 2009). It was further developed by Porter (1985), who distinguished two categories of value-adding activities in a company: primary and support activities. However, he restricted his value chain to activities within a company, without taking upstream and downstream activities into account (Faße et al., 2009). Gereffi (1994) developed the global commodity chain and focused especially on governance structures referring to institutional mechanisms and inter-firm relationships.

In literature, several different definitions of a value or supply chain were found. However, their core message is always the same. A value chain involves three or more individuals or companies that perform series of value-adding activities and processes to enable the flow of products, services, finances, information and knowledge from their origin to their destination (Molnar, 2010, Arshinder et al., 2008). Kaplinsky and Morris (2001) defined a value chain as “*a full range of activities which are required to bring a product or service passing through the intermediate phases of production to delivery to consumers and final disposal after use*”. Following this definition, the actors in a simplified agri-food chain are input suppliers, farmers, processors, marketing and consumers (Figure 2) (Springer-Heinze, 2004). According to Aramyan (2006), an agri-food chain is different from other value chains due to three factors: (1) the biological nature of the production process, increasing the variability and risk; (2) some specific characteristics of the product such as a limited shelf life; and (3) the societal and consumer attitudes towards issues such as food safety, animal welfare or environmental pressure. Typically an organic food chain is shorter, more locally oriented and with more tightly connected chain actors as compared to conventional food chains (Kottila et al., 2005).



Figure 2: Simplified agri-food chain (Source: Springer-Heinze, 2004).

However, in reality supply chains are much more complex. First, there tend to be many more links in the chain than these shown in Figure 2 (Kaplinsky and Morris, 2001). For example, the processing industry does not rely on farmers only, but also on suppliers of packaging, electricity, water and so

on. Next to that, the hierarchical structure of a supply chain is not always followed. Actors could skip one or more stages, resulting in a shorter chain. This is truly the case for agri-food chains where some farmers sell their products directly to the consumers in farm shops. Secondly, several supply chains can be linked to each other because companies typically act in a number of different chains (Kaplinsky and Morris, 2001). In our case of the agri-food chain, this means that a certain farmer for example does not always sell to the same processor. Therefore, Van Der Vorst (2006) posited the food supply chain network concept (Figure 3) where each firm is positioned in a network layer and belongs to one or more of all the possible supply chains in this network. He also stated that other actors, such as the government, influence the organization of the supply chain.

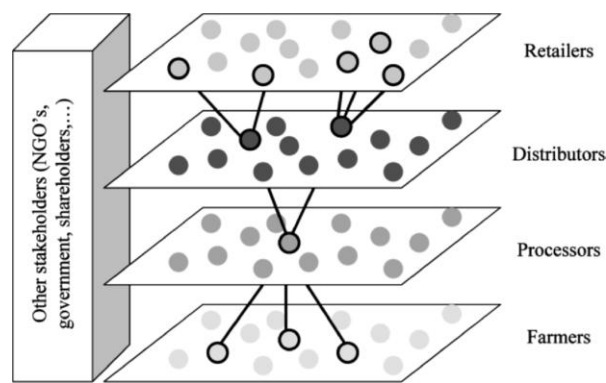


Figure 3: A supply chain (from the view of a processor) in a food supply chain network (Van Der Vorst, 2006)

2.2. Value chain analysis

In the last few years, the analysis of a value chain as a research methodology is used more and more (Faße et al., 2009). The scope of value chain analysis, which focuses more on the dynamics of linkages within the whole chain, is much broader than those of traditional economic and social analyses (Kaplinsky and Morris, 2001). Value chain analyses provide an overview and a better understanding of the economic reality of the production process. It facilitates the identification of constraints to growth and competitiveness and it explains relationships and linkages among buyers, suppliers and market actors (Alexander, 2012). This information could be used in strategic decisions to develop joint visions and selecting possible upgrading strategies. Governments could use value chain analysis to plan supportive actions and to monitor environmental impacts (Springer-Heinze, 2007).

2.2.1. Dimensions of a value chain

Gereffi (1994) distinguished five different dimensions of a value chain that could be used in analyses: technical structure, chain actors, territorial structure, input-output structure and governance structure. The analysis of these dimensions should give information about the production process, the participants at each stage, the locations of each stage, how stages are linked, who has which benefits, etcetera (Kodigehalli, 2011).

2.2.1.1. Technical structure and chain actors

The technical production process can be separated into five stages, each with its own actors: input supply, primary production, processing, marketing and consumption (Kodigehalli, 2011). However, some of these stages may be subdivided, while others can be combined or compressed (McCormick and Schmitz, 2001).

In the case of milk production, input supply comprises everything a farmer needs for the production of milk, such as feed, machinery, veterinarian practices, dairy semen... The primary production is the production of the milk itself on the dairy farm. However, lots of this milk is converted into other dairy products such as cheese or butter in the processing step. The different actors in this stage vary according to the volume and quality of the product and the complexity of the production process (Schipmann, 2006). Marketing holds the transportation and distribution of the final products. Though direct farm selling exists, most of the time logistic companies, food corporations and supermarket chains are used, especially when the amount and quality requirements are high. The last stage (i.e. consumers) becomes more and more important since food markets are consumer-driven, meaning customer demand is determining the kind, amount and quality of the goods produced (Schipmann, 2006).

2.2.1.2. Territorial structure

The territorial structure is defined as *“the geographic concentration or dispersion of production and marketing”* (Stamm, 2004). It analyzes the geographical location of the different stages of a value chain (Kodigehalli, 2011). For this study, the area was restricted to Flanders. Nevertheless, for example a processor could also sell its dairy products to foreign retailers, resulting in an international chain. In general, McCormick and Schmitz (2001) distinguished global, national, regional and local value chains, all characterized by a respectively smaller geographic distribution.

2.2.1.3. Input-output structure

Stamm (2004) defined the input-output structure as “*tangible (raw materials, intermediate goods) and intangible (knowledge) flows linked together in the process of value creation*”. This structure gives an overview of (1) the amount and quality of a good required by one stage to fulfill the requirements of the next stage; (2) the value created at each stage; (3) the profit distribution along the different actors of the chain and (4) the information flow between the several stages (Kodigehalli, 2011). The flow of information and knowledge usually parallels the material flow, but its intensity may differ (McCormick and Schmitz, 2001).

2.2.1.4. Governance structure

The governance structure of a value chain was defined as “*the set of institutional arrangements within which a transaction is organized*” (McFetridge, 1994). Governance could be seen as the power to define who does and who does not participate in the chain, the setting of rules of inclusion, helping other actors in achieving the standard and monitoring their performance (Kaplinsky and Morris, 2001). The mode of governance refers to the extent of control a lead firm has on the exchange of information and production activities and thereby could influence the allocation of resources and gains along the chain. Muradian and Pelupessy (2005) stated that power is exerted if leading actors are able to set the conditions where others have to operate in.

Based on three variables (information complexity, ability to codify information and supplier capabilities), Gereffi et al. (2005) distinguished five different governance forms: market coordination, modular value chains, relational value chains, captive value chains and hierarchical value chains.

Peterson et al. (2001) posited the concept of the vertical coordination continuum which is a range of possible governance structures, based on their level of coordination control and formalization (Figure 4). At the side of lowest control, there is the spot market, characterized by a make-or-buy decision and ‘invisible hand’ coordination. The only control that firms could exercise here is to engage in price discovery, so the control is almost entirely *ex ante* to the transaction. At the other side of the spectrum, there is fully vertical integration, i.e. one organization that has the total control over the transaction. The scope of control here is *ex ante* as well as *ex post*. Between those two extremes, there are still three hybrid governance structures. In order of increasing control, Peterson et al. (2001) called them specifications contract, relation-based alliance and equity-based alliance.

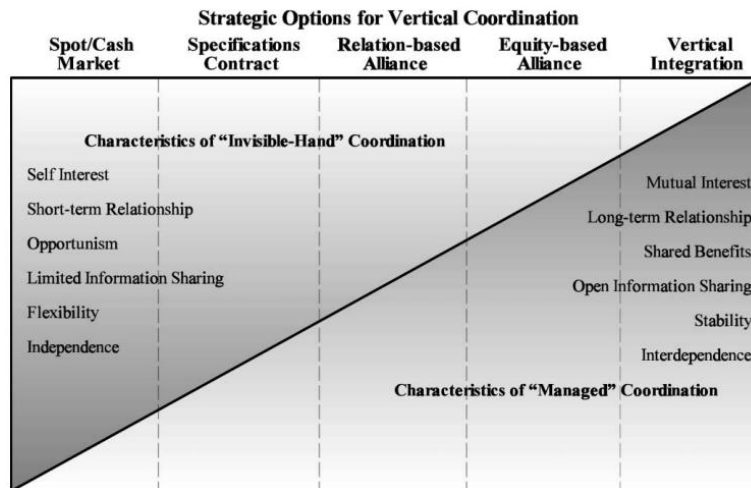


Figure 4: Vertical coordination continuum (Source: Peterson et al., 2001).

However, the taxonomy used in this paper is adapted from Molnar (2010). Here, spot markets and vertical integration are again the two extremes of the continuum. But this categorization distinguishes more hybrid structures. In order of increasing coordination control, there are non-contractual relationships with non-qualified and with qualified partners, contractual relationships, relation-based alliances and equity-based alliances. Table 1 gives an overview of the definitions of the different governance structures according to Molnar (2010).

Table 1: Governance structures in increasing order of formalization (adapted from: Molnar, 2010).

Spot market
When our company does business with our supplier/ customer each transaction (price, quantity, quality etc.) is negotiated individually
Non-contractual relationship with non-qualified partner
Doing business with our supplier/ customer is based on trust and it is not a prerequisite that we know in advance whether our supplier has a qualification/third party certification
Non-contractual relationship with qualified partner
Doing business with our supplier/ customer is based on trust but it is a prerequisite that we know in advance whether our supplier has a qualification/third party certification
Contractual relationship
Our relationship with our supplier/ customer is based on a written contract (price, quality, delivery time, etc.)
Relation-based alliance
Our company and our supplier/ customer develop common business ideas
Equity-based alliance
Our company and our supplier/ customer combine resources (human, financial etc.) in joint projects
Vertical integration
Our company and our supplier/ customer are fully integrated (financial, organizational)

2.2.2. Mapping

An important initial step when conducting a value chain analysis is mapping. The purpose of the mapping procedure is to define the boundaries of the value chain and to identify all actors. By doing so, the product flow can be determined and all intra-chain relations become visible (Faße et al., 2009). However, since in practice there are many possible links (see 2.1), the entire mapping of a whole supply chain could be very hard.

2.2.3. Upgrading

According to Stamm (2004), upgrading is *“the process that enables a firm or any other actor of the chain to take on more value intensive functions in the chain, make itself harder to replace, and thus appropriate a larger share of the generated profits”*. With the information from a value chain analysis, four possible ways of upgrading could be followed. Firstly, process upgrading is making the transformation of inputs into outputs more efficient. Secondly, choosing more sophisticated product lines is called product upgrading. The third form is functional upgrading, meaning you improve your functional position. The final option is sectorial upgrading, i.e. choosing a new value chain (Kaplinsky and Morris, 2001).

2.3. Value chain integration

Value chain integration (VCI) is very important in supply chain management which in fact is even predicated on VCI. Well-managed supply chains are those where all value creating processes are aligned aiming at providing the highest level of customer value, meaning all processes of the value chain are integrated (Pagell, 2004). The main drivers of the rise of VCI are (1) the information revolution; (2) the increased levels of competition, creating more demanding customers and demand driven markets; and (3) the emerge of new types of inter-organizational relationships (Handfield and Nichols, 1999)

Therefore, VCI is a phenomenon studied extensively in literature in various ways (reviewed by e.g. Frohlich and Westbrook, 2001); however, a unified definition of VCI does not exist. We try to define it as the degree to which chain actors strategically collaborate with each other through synchronization of their intra- and inter-organizational activities. Therefore, they coordinate their operational, logistical and planning database with the aim of increased performance in order to maximize value for the end customer (Villena et al., 2009, Fawcett and Magnan, 2002, Flynn et al., 2010). The main advantage Villena et al. (2009) mentioned, is the access and use of knowledge and resources from chain partners allowing them to better exploit and improve their capacities. However, the goal

should always be realizing effective and efficient flows of products, services, information, money and decisions (Flynn et al., 2010).

Studies revealed various perspectives of the dimensionality of VCI, reviewed by Flynn et al. (2010). They argued that ultimately VCI can be broken down into three dimensions: external (customer and supplier) and internal integration. External integration, i.e. collaboration and alignment of strategies and processes between different chain actors, involves coordination of core competences with critical customers (forward) and with critical suppliers (backward) (Bowersox et al., 1999). Internal integration refers to the degree a firm structures its own strategies into collaborative and synchronized processes. Both, internal and external integration, are important since the former stresses all firm's operations should function as a whole, while the latter emphasizes on interactive relations with suppliers as well as customers (Flynn et al., 2010). An extended type of integration is a complete forward and backward integration from the suppliers' supplier till customers' customer. However, this kind of VCI was perceived as very rare and could be seen as a more theoretical ideal (Fawcett and Magnan, 2002). Finally, it should be mentioned that all these kinds of VCI are called "vertical integration", i.e. between consecutive actors in the chain. Moreover, also "horizontal integration" could occur where competitors on the same chain level start working together to outperform others (Barratt, 2004).

2.4. Value chain performance

Value chain performance (VCP) is the overall measure of the performance of a whole chain, depending on the performance of the individual actors (Aramyan et al., 2007). According to Van der Vorst (2000), VCP is the extent to which the supply chain meets consumers' requirements about the relevant performance indicators and at which total cost it does so.

Literature describes several models to assess VCP, of which the main models were reviewed by Aramyan et al. (2006). First, the SCOR® model combines reliability, cost, responsiveness and asset measures to provide a guidance for the possible performance metrics. A second model is the Balanced Scorecard, using a financial, customer, business process, innovation and technology perspective. Next, Activity Based Costing enables companies to more accurately assess the costs of specific products or customers. Multi-Criteria Analysis establishes preferences between several options according to a set of objectives the company identified. Life-Cycle Analysis uses detailed measurements of input use and environmental pressure in the entire supply chain. Finally, Data Envelopment Analysis measures the efficiency of a company relative to those of competitors.

According to Hannus (1993), adapted from Korpela et al. (2001), VCP measurement should reflect the objectives of the main stakeholders of the chain. This means that it should comprise financial as well as operational performance indicators. These authors suggested using three categories of indicators: efficiency, flexibility and responsiveness. However, due to the perishability of food, Aramyan et al. (2006) suggested adding food quality as a fourth performance category when analyzing agri-food chains. Each category contains more detailed indicators, obtained by Aramyan et al. (2006) from the review of several other studies, which could be used on organizational level as well as on supply chain level (Aramyan et al., 2007).

2.4.1. Efficiency

Efficiency measures how well resources are used (Lai et al., 2002) and mainly indicates the financial performance. It could contain several indicators such as production, logistic or transaction costs, profit, return on investment and data about inventories (Aramyan et al., 2006). In this thesis we included logistic costs and profit as indicators for efficiency. Logistic costs could be seen as the operating and opportunity costs that could be influenced by logistic decisions and by the integration of management practices and activities throughout the logistic chain (Perona et al., 2001). Profit is defined as the positive gain from an investment or business operation after subtracting all expenses (Aramyan et al., 2007).

2.4.2. Flexibility

Flexibility refers to the extent to which the supply chain can respond to a changing environment and to specific consumer requests (Beamon, 1998). Possible indicators for flexibility are consumer satisfaction, volume flexibility, delivery flexibility and number of late orders. Here we chose to use customer satisfaction (i.e. ratio of satisfied to unsatisfied customers) and volume flexibility (i.e. the ease to change output levels of the products produced) (Aramyan et al., 2006).

2.4.3. Responsiveness

Responsiveness aims at providing the requested products with a short lead time (Persson and Olhager, 2002). The indicators for responsiveness that Aramyan et al. (2007) suggested, were fill rate, product lateness, customer response time, lead time, shipping errors and customer complaints. However, in this thesis we only used customer complaints and lead time, i.e. duration between sending/getting a request until the delivery of the goods or service (Gunasekaran et al., 2001).

2.4.4. Food quality

According to the framework of Luning et al. (2002), food quality could be divided into product and process quality. The former contains factors such as sensorial properties and shelf life, product safety, health and convenience, while indicators for the latter could be production system characteristics (e.g. pesticide use, animal welfare...), environmental friendliness and marketing aspects. The indicators used here were product safety, i.e. degree to which the product does not exceed acceptable levels of pathogenic organisms or chemical and physical hazards (Molnar, 2010), environmental friendliness, i.e. referring to the use of packaging, water, energy... (Aramyan et al., 2007), and attractiveness, i.e. the product's appeal according to customers (Verbeke et al., 2009).

2.5. Theoretical framework

Supply chain management gained more and more attention in research and has been approached from many different academic perspectives. The complexity of today's value chain makes it almost impossible to explain its functioning with one single theory. Therefore, the main concepts of following important theories are considered relevant for our research topic.

2.5.1. Strategy-structure-performance (SSP) paradigm

The SSP paradigm of strategic management states that a firm's strategy, including its external factors, influences the corporate structure and processes which will help the firm to achieve its desired performance (Galunic and Eisenhardt, 1994). This paradigm acknowledges the importance of communication to create trust and close relationships among the chain actors (Hutt et al., 2000). VCI is one of the most popular strategies to compete in present markets since it is no longer possible to succeed as a single, isolated company. Fortuin (2007) stated that chain strategies should be formulated based on common goals, so these goals should be aligned across the partners of an integrated value chain.

2.5.2. Transaction Cost Economics (TCE)

Each transaction implies *ex ante* costs (e.g. costs for drafting or negotiating) and *ex post* costs (e.g. set-up and running costs associated with the governance structure) (Fynes et al., 2004). These transaction costs are characterized by their asset specificity, the frequency of the transaction and the uncertainty involved (Williamson, 1985). These factors, together with the characteristics of the chain actors (i.e. bounded rationality and opportunistic behavior), influence the governance structure to be adopted (Slangen et al., 2008). This means that good governance of transactions makes it possible for the partners to realize mutual gains on their cooperation (Verhaegen and Van Huylbroeck, 2002).

Since the link between governance and VCI is an important topic of this thesis, TCE could be seen as a main building block of this framework.

2.5.3. Resource Based View (RBV)

The baseline of the RBV of strategic management is that resources may be heterogeneous and immobile. Therefore, a corporate strategy leveraging these resources should be chosen so that a competitive advantage could be achieved (Barney, 1991). An important reason chain actors want to integrate is the desire to pool their resources and use them in a way that it sustains the competitive advantage of all the chain members and the value chain as such (Villena et al., 2009). According to Helfat and Peteraf (2003), resources are assets or inputs that could be owned, controlled and utilized semi-permanently through VCI. To stay competitive, there is a need to integrate in order to create a portfolio of heterogeneous assets, something unlikely to happen in an unintegrated chain.

2.5.4. Social capital theory

Social capital is defined in literature as a valuable asset originating from the access to resources made available for all parties in a relationship (Granovetter, 1992). Nahapiet and Ghoshal (1998) proposed three dimensions of social capital: (1) the structural dimension deals with social capital gained by structural configuration and the creation of social links between chain members; (2) the cognitive dimension refers to social capital provided by shared values and goals; and (3) the relational dimension comprises the degree of trust, obligation, respect and reciprocity between the parties. Since TCE cannot fully explain governance structures (Granovetter, 1985), the social capital theory also seemed relevant for our research.

2.6. Research objectives

The research done in this paper has two main objectives. A first objective is to map the value chain of Flemish organic milk production, processing and distribution. While doing so, we attempt to measure the overall performance in this chain and we try to identify some of its malfunctions. On the basis of these interferences we will try to suggest some potential adaptations to guarantee the efficient and effective functioning of the chain.

Secondly, based on the data of the Flemish organic milk case, this study aims to investigate the impact of VCI on the performance of a supply chain. Next to this, some possible factors enhancing or inhibiting VCI are examined. While exploring literature, we identified several attributes that possibly affect integration. For example, several authors (Aertsens, 2011, Kvam and Bjørkhaug, 2014, Peterson et al., 2000) mentioned leadership as a prerequisite for a good integration within organic

chains. These authors stated that one chain actor, mostly the one with the most power, must be acknowledged as leader of the chain. However, other authors found organic supply chain relationships to suffer from imbalanced power distributions (Kottila and Rönni, 2008).

Kottila et al. (2005) argued that the two main obstacles to the optimization of organic food chains were the following. On the one hand, they mentioned insufficient communication and information management and on the other hand diverging objectives between chain actors. Aertsens (2011) stated that organic markets would benefit more from hybrid governance structures. Therefore, in this thesis we focus on these three factors that could be enhancing or inhibiting VCI: goal alignment, governance structure and information sharing between partners. Together with the impact of VCI on VCP, these topics form the four research questions of this study. It should be mentioned that most authors directly investigated the impact of goal alignment, governance structure and information sharing on VCP. However, in this paper we first investigate their relationship with VCI, and so indirectly with VCP.

RQ1. Goal alignment across the value chain positively affects value chain integration.

Vachon et al. (2009) stated that strategic alignment should improve cooperation between chain actors and so also VCP. Incentive alignment schemes motivate chain actors to concert their individual efforts and therefore lead to a better integrated chain (Simatupang et al., 2002). Also in agri-food markets chain actors should share common visions and missions (Peterson et al., 2000). Since performance generally is defined as the degree to which goals are achieved, analysis of VCP is incomplete without taking value chain goals into account. Therefore, goal clarity is an important step in measuring VCP. Goals have to be well defined and clear to all chain members so that each of them could contribute to the achievement of these goals, something which only could be reached when all chain partners work together and when conflicting individual goals are dropped (Molnar, 2010).

Since each firm has its own (conflicting) goals, it is impossible to achieve all of these individual goals at the same time, so commonly agreed chain goals have to be developed to achieve a better performance of the whole chain (Gagalyuk and Hanf, 2008). Goal alignment represents the extent to which chain actors share a common understanding and contribute to the achievement of common tasks and outcomes. These congruent goals provide partners a shared mission through which they increase understanding in behavioral norms within the relationship (Villena et al., 2011). Coherency among chain actors is an important factor in increasing actor's commitment since it paves the way for collaboration and enhances the environmental and economic benefits of organic food production (Kottila, 2010). All faces should look in the same direction for a chain to quickly and cost-effectively deliver goods to consumers (Narayanan and Raman, 2004). Aertsens (2011) indicated the objective

of each chain member should be “to satisfy consumer demand at maximum efficiency”, which has to be translated into more specific goals. A plausible way to achieve this is to improve relations between the chain partners (Aertsens, 2011). Also Kottila et al. (2005) found conflicting goals to be inhibitors for better relationships and performance.

Relationships between chain members could only be remaining when risks, costs and rewards are fairly distributed across the supply chain. Especially in agri-food chains where profit margins are under pressure, a fair distribution of rewards and penalties is crucial (Leat and Revoredo-Giha, 2008). Misaligned incentives are the cause of excess inventory, incorrect forecasts or inadequate sales efforts; all symptoms pointing at a poor performance (Narayanan and Raman, 2004). These authors therefore stated alignment of incentives influences VCI, and so also VCP.

RQ2. The governance structure of the chain positively affects value chain integration.

Moving on the continuum of governance structures from spot markets to vertical integration should improve the performance of business relationships (Gyau and Spiller, 2008). Despite the fact that many authors agreed with this statement, yet less research was done on it (Crişan et al., 2011). Therefore, these authors suggested exploring this relationship using different case studies so that a general framework could be built around it.

The different governance structures can be identified using several variables. A first one found in literature is the relevance of the identity of a company, referring to the ease and costs incurred with switching between suppliers or customers (Molnar, 2010). For example, spot markets are characterized by low switching costs, so the identity of the partners could be seen as not important (Raynaud et al., 2005). The use of written contracts is a second variable since it is a frequently used mechanism to reduce the transaction costs of spot markets (Szabó and Bárdos, 2006). Trust has been studied frequently as an important prerequisite of well-functioning collaborations, which is also the case in organic food chains (Kottila and Rönni, 2008). Therefore, the level of inter-organizational trust also determines the governance structure to be chosen (Gulati and Nickerson, 2008).

Asset specificity is a major variable of governance structures in organic food markets. Producing organic food implies several irreversible adaptations (e.g. adapting stables, additional or adapted equipment...), resulting in high sunk costs. Therefore, chain actors try to make agreements with each other to reduce the risk of not recuperating these specific investments (Aertsens, 2011). Finally, environmental uncertainty, i.e. uncertainty among inputs, outputs, the transformation process or the institutional market, also determines governance. Organic markets are typically marked by higher uncertainty levels than conventional markets since (1) the demand and therefore also the prices

fluctuate more; (2) organic farming is more dependent on the weather since it could not use facilitators such as pesticides; and (3) ongoing changes in legal regulations (Aertsens, 2011).

In literature, governance and integration are often used for the same concept; however, in this paper we see them as different aspects. According to Crisan et al. (2011), governance refers to the structural mechanisms used by different actors to influence and control the actions of other supply chain partners. Unfortunately, the governance structure at the extreme of highest coordination is called “vertical integration”, i.e. with all actors working as they were one firm and controlled by one leader company. However, this term should not be confused with value chain integration, since VCI has a broader meaning whereof governance structure is one of its determinants. VCI should be seen as the comprehensive relationship and collaboration among supply chain members in strategic, tactical and operational decision-making (Bagchi et al., 2005).

RQ3. The level of information sharing among chain members positively affects value chain integration.

Information sharing refers to the extent to which critical and proprietary information is communicated to supply chain partners (Monczka et al., 1998). Several authors already mentioned knowledge sharing as an important factor in successful supply chain relationships (Leat and Revoredo-Giha, 2008). Stern and El-Ansary (1996) for example stated that a working information system between chain members is a prerequisite for efficient channel coordination. Many authors mentioned that communication is one of the most important antecedents of VCI (e.g. Narasimhan and Kim, 2001). Also Molnar (2010) pointed at the importance of communication in the creation of trust and good chain relationships. Information sharing improves the coordination between chain partners and leads to higher levels of VCI and VCP (Li and Lin, 2006). This especially seems to be true in organic food chains since not only economical information has to be taken into account, but also information concerning the environmental, ethical and social value of organic food (Kottila et al., 2005). Kottila (2009) stated that the lack of knowledge among chain actors is an important factor of the malfunctioning of the organic chain. She hence concluded that efficient ways of information sharing are needed.

The impact of information sharing truly depends on the quality of the information shared (Li and Lin, 2006). According to Monczka et al. (1998), this quality refers to the timeliness, accuracy, adequacy, completeness and reliability of the information shared. In order to obtain a powerful collaboration, information should be shared in a bi-directional way (Kottila and Rönni, 2008). The adoption of information technologies (IT) would facilitate and improve the level of information sharing and its quality (Li and Lin, 2006). These IT systems allow partners to collect and store data about all chain

members in a centralized database. In this way, they improve chain collaboration, responsiveness and flexibility (Du et al., 2012). Therefore, Gunasekaran et al. (2004) stressed the importance of IT systems in simplifying information sharing along the value chain, serving as an precursor for VCI.

RQ4. The level of value chain integration positively affects value chain performance.

Many studies mentioned that internal and external integration should lead to higher levels of VCP (Pagell, 2004). Fabbe-Costes and Jahre (2008) concluded from their review that most studies examining this correlation found a positive effect. However, many of them assumed it to be positive without really proving it. Frohlich and Westbrook (2001) were one of the first to demonstrate empirically that the widest degree of integration (i.e. integration with suppliers as well as customers) led to the biggest performance improvement. Even integration in organic chains and its impact on VCP has already been studied. Kotilla et al. (2010) concluded that organic chains were loosely integrated and were therefore non-properly operating systems.

Successful integration among all members of the supply chain implies chain actors' collaboration, commitment, trust, communication quality, participation and joint problem solving (Du et al., 2012). Barratt (2004) mentioned resources, commitment, collaborative culture and joint decision making as important determinants of VCI. According to Simatupang et al. (2002), different types of coordination are necessary to create a well-integrated chain because it enables chain actors to work as a whole, leading to a higher VCP. Like Barratt (2004), these authors also mentioned joint decision making as a prerequisite of VCI, for example in logistic processes this could be joint forecasting or joint inventory management. Equal decision rights and decision synchronization refers to the extent to which chain members are able to orchestrate critical decisions in order to match supply with demand (Simatupang and Sridharan, 2005). Zhao et al. (2008) discussed another factor of VCI, namely commitment, i.e. the willingness to invest financial, physical or relation-based resources in a relationship or, in other words, a chain actor's attitude about the development and maintenance of stable, long-lasting mutual relationships. Finally, VCI is impossible when chain actors do not see the advantages of a close collaboration. Therefore, a collaborative culture where all members of a company want to cooperate with their chain partners, is needed (Barratt, 2004). This author mentioned trust and information exchange as components of this collaborative spirit; however, we already included these in the antecedents of VCI (*cf. supra*).

VCP could be described by using the variables discussed above (see 2.4). Summarized, they were efficiency (logistic costs and profit), flexibility (customer satisfaction and volume flexibility), responsiveness (lead time and customer complaints) and food quality (food safety, environmental friendliness and attractiveness).

2.7. Conceptual framework

Based on the theoretical background about value chain analyses (see 2.2), VCI (see 2.3) and VCP (see 2.4) and based on the above mentioned theoretical framework (see 2.5), the research questions could be summarized in the following conceptual framework (Figure 5).

It should be mentioned that many authors also found other and inverse relationships between the different factors presented in this framework. For example, Li and Lin (2006) concluded that in more integrated value chains with higher levels of trust the quality of shared information is higher. Also the indirect correlation between the three antecedents of VCI has already been mentioned in literature, for example Vachon et al. (2009) stated that better strategic alignment would lead to higher levels of information sharing. However, in this study we neglect these correlations and we focus on those illustrated in Figure 5.

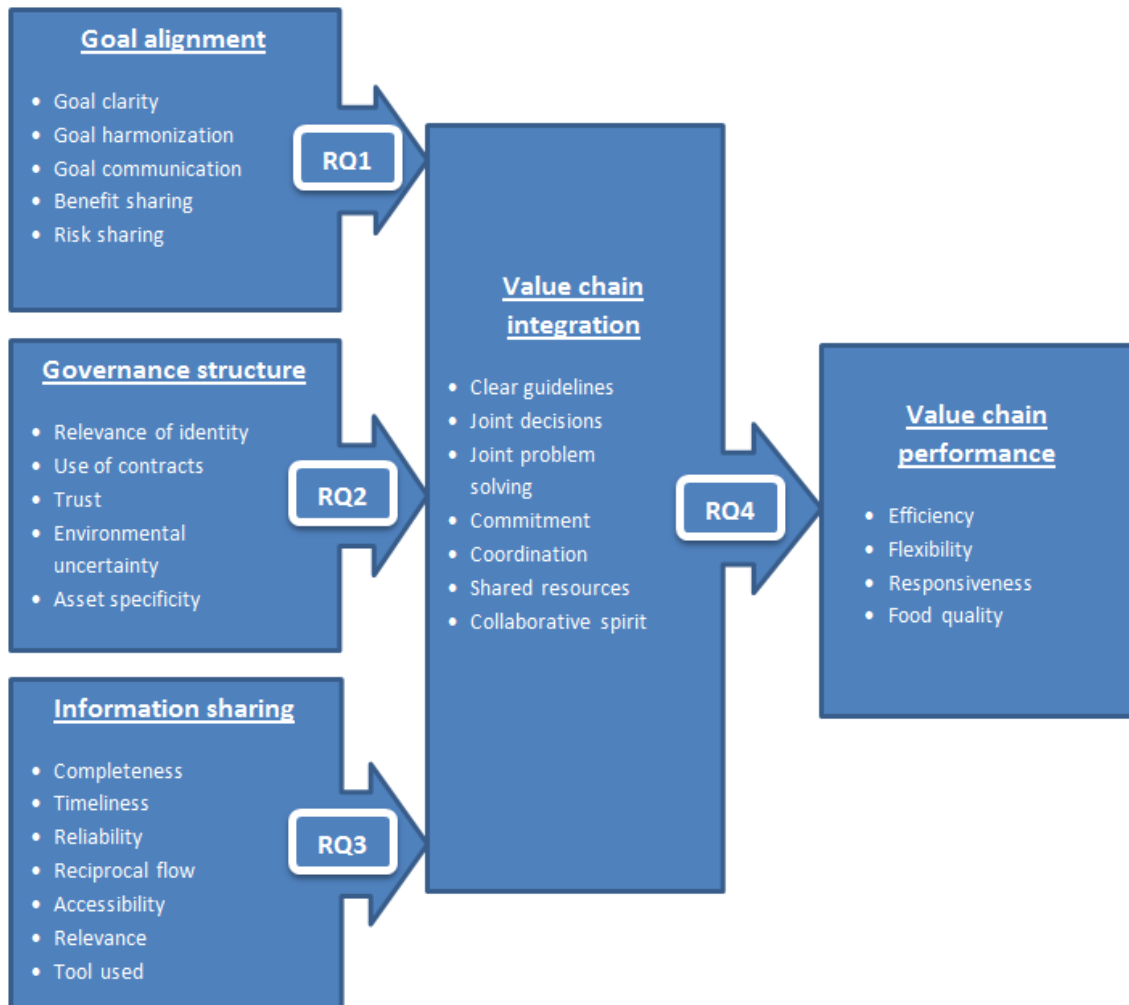


Figure 5: Conceptual framework (based on: Watabaji, 2012, Leat and Revoredo-Giha, 2008)

CHAPTER 3. RESEARCH METHODOLOGY

3.1. Data collection

The data collection of this study has been split up in three parts. To start, general information about the functioning of the organic milk sector in Flanders was obtained by an in-depth interview with a representative of the cooperative. Using this information and the information found in literature, all chain actors were identified and characterized in order to be able to map the entire supply chain.

Secondly, a questionnaire was set up based on the conceptual framework in order to be able to test the proposed hypotheses (see Appendix). Some minor parts were open questions, while others were questions the respondents had to score several statements on a 7-point Likert scale according to the extent they agreed. For the latter, the relationships with their most important supplier as well as with their most important customer were interrogated. In order to be able to calculate one weighted overall score for each of the five conceptual subjects, respondents were asked to allocate 100 points among the different statements according to their perceived importance. A third and final step of the data collection contained further in-depth interviews with specific respondents (*cf. infra*).

Because we concluded there were too many links between the several chain actors and as also mentioned by Kotilla and Rönni (2008) some of these are difficult to interview (e.g. big retailers), we decided to focus on the first three steps of the organic milk chain, i.e. farmer-cooperative-processor. By doing so, we were able to maintain the simplicity of the study and we focused on the most relevant organic actors of this agri-food chain. Given its limited scope, it was possible to address all actors of our focal part of the Flemish organic milk chain, i.e. 17 farmers, the cooperative and 3 processors.

Each of the questions concerning one specific relationship was asked in twofold, i.e. to both actors dealing in the relationship, so reciprocal information could be gathered (Figure 6). In our case, farmers were asked about their relationship with the cooperative while the latter scored the same statements concerning its relationship with the farmers (F-C). Similarly, the relationship between the cooperative and the processors (C-P) was explored.

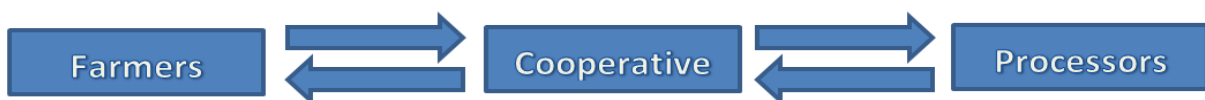


Figure 6: Relationships within the focal chain: farmer-cooperative (F-C) and cooperative-processor (C-P).

3.2. Data analysis

Firstly, based on a multiple attributes model, one weighted overall score per conceptual subject has been calculated. This model, introduced by Fishbein (1963), is mainly used in marketing research to investigate consumers' attitudes towards objects or brands (Svensson and Sjöberg, 2012). Attitude is calculated by summing the multiplications of the belief score with the importance evaluation score for each attribute:

$$A_0 = \sum_{i=1}^n b_i \times e_i \quad (\text{Eq. 1})$$

With A_0 = attitude towards the object

b_i = the strength of the belief that the object has attribute i

e_i = the evaluation of the importance of attribute i

n = number of attributes

To our knowledge, in supply chain research this kind of model has never been used before. Nevertheless, it seemed useful to us to calculate an weighted overall score for the five conceptual subjects, corresponding with A_0 in Equation 1. Similar to b_i , respondents in this study were asked to score the statements concerning the five conceptual subjects on a 7-point Likert scale according to the extent to which they agreed. Here e_i was the importance score the respondents allocated to each of the statements. Since 100 points had to be divided between the different statements, multiplying by this importance score resulted in a weighted score per statement. Summing all these weighted scores and dividing by 100 gave one weighted overall score per conceptual subject, again between the Likert scales 1 to 7.

Since our focal chain only contained a very few actors, it seemed inappropriate to validate the stated research questions using statistical analysis. Due to this lack of sufficient quantitative data, a qualitative case study approach based on the questionnaire results appeared to be more suitable because of the exploratory nature of this study (Voss et al., 2002). While a quantitative econometric analysis of data could answer the question "what happened", a qualitative research using case studies has the advantage also granting insight in "why it happened" (Aertsens, 2011). Firstly, a thorough screening of the questionnaires showed some remarkable results worth further examining. These could be remarkable owing to significant differences between the answers actors indicated concerning the relationship between both of them. Similarly, also significant high or low scores were retained for further exploratory research. Therefore, extra in-depth interviews with the concerned chain actors were held to further examine the discrepancy between their results.

CHAPTER 4. RESULTS AND DISCUSSION

In the following chapter we first give some basic information about the respondents of the questionnaire. Next, we use the mapped flowchart of the Flemish organic dairy chain as a guidance for the discussion of the functioning of this sector. The third part of this chapter gives an overview of the results concerning the five conceptual subjects, while in the last part we explain our findings about the four proposed research questions.

4.1. Respondents

Out of the 21 questionnaires sent, 10 were received back and could be used in analysis (see Table 2). Asking missing respondents why they did not participate, a lack of time was the most common reason. Since the timing of the questionnaire was in April, it coincided with farmers' busiest part of the year, especially as in this period the weather was outperforming. Some others stated too many of these theoretical questionnaires are sent to farmers and those farmers also mentioned they were not concerned about the functioning of the chain. This was already a first indication that some – rather older – farmers are not willing to actively participate in a well-integrated chain. They prefer to work as they were used to as one of these farmers quoted:

“The only reason I participate in the cooperative is because everyone does it and it tries to guarantee better prices for me. Everything further in the chain does not bother me. My job is producing milk on my farm and trying to survive from it.”

Table 2: Questionnaires received compared to sent.

Respondents	Received/sent
Farmers	7/17
Cooperative	1/1
Processors	2/3

4.2. The Flemish organic dairy chain

First of all, the supply chain for organic milk and dairy production was mapped, starting from primary production till consumer (Figure 7). In general, we concluded that this value chain was not very extensive since organic milk and dairy products are a small niche market compared to conventional milk (Willer and Lernoud, 2014). For this study, we only focused on animal production and its

processing and marketing, meaning farmers were the starting point. To be complete also farmers' input suppliers should be taken into account. However, crop and feed production is either done by the farmers themselves or is executed by totally different companies which would lead us too far. Asking for their feed supplier stated the niche market nature of this sector as most farmers indicated the same feed company.

Despite lots of efforts of the Flemish government to persuade dairy farmers to switch to organic milk production (e.g. Bio zoekt Boer) and some limited interest from farmers, very little farmers really made the transition previous years (Verbeke, 2012), as also suggested by the constant number of organic cattle in Flanders (AMS, 2014). In comparison, many Walloon farmers switched to organic milk production last years, presumably because agricultural area is not yet a scarce production factor there. Lynggaard (2001) concluded from his study that in Belgium conventional farmers had poor interrelationships with their organic colleagues, hampering a possible transition. He also stated Belgian institutional development was not as attractive for organic farming as it was for example in Denmark. De Cock et al. (2005) mentioned several reasons why farmers are so sceptic about switching to organic farming as only 1% indicated to surely switch within the first years. They concluded these reasons were mainly marketing and socially inspired, such as risk aversion or the lack of market assurance.

In Flanders, 17 of the 18 organic dairy farmers are united in a cooperative, BioMelk Vlaanderen (BMV), to which they sell their milk. Some of these farmers also have other selling points such as on farm processing or small local processors. For example, two farmers of BMV deliver part of their milk to the organic cheese producer Hinkelspel, while the rest of their milk is collected by BMV. Since a few years, one farmer decided not to cooperate with BMV, but to directly sell its milk to the processor. This was initiated by the main processor (Pur Natur) in an attempt to separate the farmers from the cooperative in order to increase their bargaining power towards the farmers. Until now only one farmer decided to work like this, while the remainder stayed within the cooperative (BioMelkVlaanderen, 2014, Verbeke, 2012).

Since organic markets are rather small, many examples could be found where organic chain actors horizontally and vertically cooperated to bundle their strengths (Kvam and Bjørkhaug, 2014). Assembling organic farmers into a producer cooperative could have several advantages: (1) more delivery certainty for the suppliers, (2) more supply certainty for the customers, (3) easier to convince other farmers to switch, (4) realizing economies of scale and/or scope, (5) improving the product quality using certificates and standards, and (6) jointly promoting organic products towards the consumers (Aertsens, 2011). Lynggaard (2001) already posed that Belgian organic food markets

lacked the necessary institutions for a well-functioning chain, illustrated by the failure of a Walloon attempt to create a Belgian cooperative for organic dairy farmers. Therefore, in 2002, 23 Flemish farmers took initiative and established BioMelk Vlaanderen (BMV) as a Flemish cooperative for organic milk producers. Their objective was to get the best price out of the market and share this profit with all its members. On the other hand, potential losses of their organic price premium due to selling surpluses as conventional milk, are also shared among all farmers. Besides, the cooperative wanted to be an address point for farmers to help them with their problems and tried to ameliorate the overall image of organic dairy products. Finally, by concentrating all organic dairy farmers in one cooperative, they could increase their bargaining power towards their customers. In the beginning, the latter were mainly local processors, so in 2004 about 30% of the production had to be sold on the conventional market. Later on, more industrial processors were convinced about the organic concept and also export to the neighboring countries began to expand, resulting in full organic marketing of the milk at the end of 2005. BMV tried to persuade conventional dairy farmers to make the transition, but again very little farmers really did because the cooperative was not able to guarantee a sustainable and sufficient price premium to compensate for the higher production costs. Therefore, BMV searched for farmers in other regions, as for example the cooperation since 2007 with their Walloon sister-organization Biolait Wallonie. In 2009, they further increased the production capacity of organic dairy products and thanks to this scale enlargement BMV was able to negotiate better prices. However, during all these years, the cooperative faced the same problem as the one its predecessor failed on: the high collection costs per liter. Since all farmers are settled very sparse around Flanders, collection of the milk is very expensive due to high transportation costs. Despite the fact that the expansions doubled the amount of farmers linked with BMV, collection costs did not decrease because the collection area doubled in size as well. Therefore, a reduction of the collection costs per liter remains the major goal of BMV (Aertsens, 2011, BioMelkVlaanderen, 2014).

The cooperative buys all the organic milk from its farmers and sells it to the processors. We could distinguish three kinds of Flemish organic dairy processors: industrial, local and home processors. Industrial processors are typically bigger organizations working with employees, consuming the major part of the organic milk. In Flanders, there are two processors that could be classified as industrial: Pur Natur and Limelco. The former is responsible for almost 80% of BMV's sales since the latter is rather new on the market since the start of its cooperation with BMV in 2011. They aimed at selling fair trade organic milk, for which they closely work together with BioSano as wholesaler. Secondly, local processors are smaller and more artisanal companies, with fewer or no employees and taking only a minor part of Flemish organic milk production. Some of these buy their milk to BMV (e.g. Damse Kaasmakerij), while others directly buy the milk from the farmers (e.g. Hinkelspel). The

last category of processors is those of farmers processing some of their own milk in order to sell it in their farm shop. Several kinds of dairy products are made from organic milk: consumption milk, cheese, butter, cream, yoghurt, ice cream and milk powder are the most common. Next to Flemish processors, organic milk is exported also to neighboring regions, especially Wallonia. Finally, it should be mentioned that there are still other big Flemish processors producing organic dairy products (e.g. Campina), but they only use imported organic milk (BioMelkVlaanderen, 2014, Verbeke, 2011).

Sales of organic dairy products could be split up into different marketing channels. The most important one is sales via one of the three big mainstream retailers in Flanders: Delhaize, Colruyt and Carrefour; representing 44% of the total sales of organic dairy products. These products are mainly sold as private labels, but some specialties are sold under their own brand name. A problem BMV is coping with, is the real origin of the “Belgian” organic dairy products since their processors also buy foreign milk to process while retailers sell this under the Belgian label. With a 30% market share in 2010, health food shops are the second biggest and still a growing marketing channel for Flemish organic dairy, despite the fact that they mainly sell foreign organic dairy products in order to be distinctive from big retailers. Next, export to neighboring regions represents a significant part of organic dairy marketing as well, as estimations counted 18 million liters organic milk exported in 2010 of which 10 million liters were processed dairy products. Another marketing channel includes wholesalers (e.g. BioSano) directly selling to institutional customers such as schools and hospitals. Yet other wholesalers (e.g. BioFresh) distribute organic dairy products as well, selling to health food shops and restaurants. Home sales on the farm showed a declining trend previous years, representing only 3.4% of total sales in 2010 (BioMelkVlaanderen, 2014, Verbeke, 2011).

Finally, consumers seemed to have lots of possibilities to buy organic dairy products, ranging from the organic farm to their familiar retailer. 88% of all Flemish people indicated that they have bought at least once an organic food product and even 18% stated to be frequent buyers, suggesting Flanders shows some potential for organic farming. 36% of the organic purchasers in 2013 bought organic dairy products, a higher percentage compared to earlier years. Well-off households with children and well-off pensioners accounted together for 50% of all organic sales (Samborski et al., 2014).

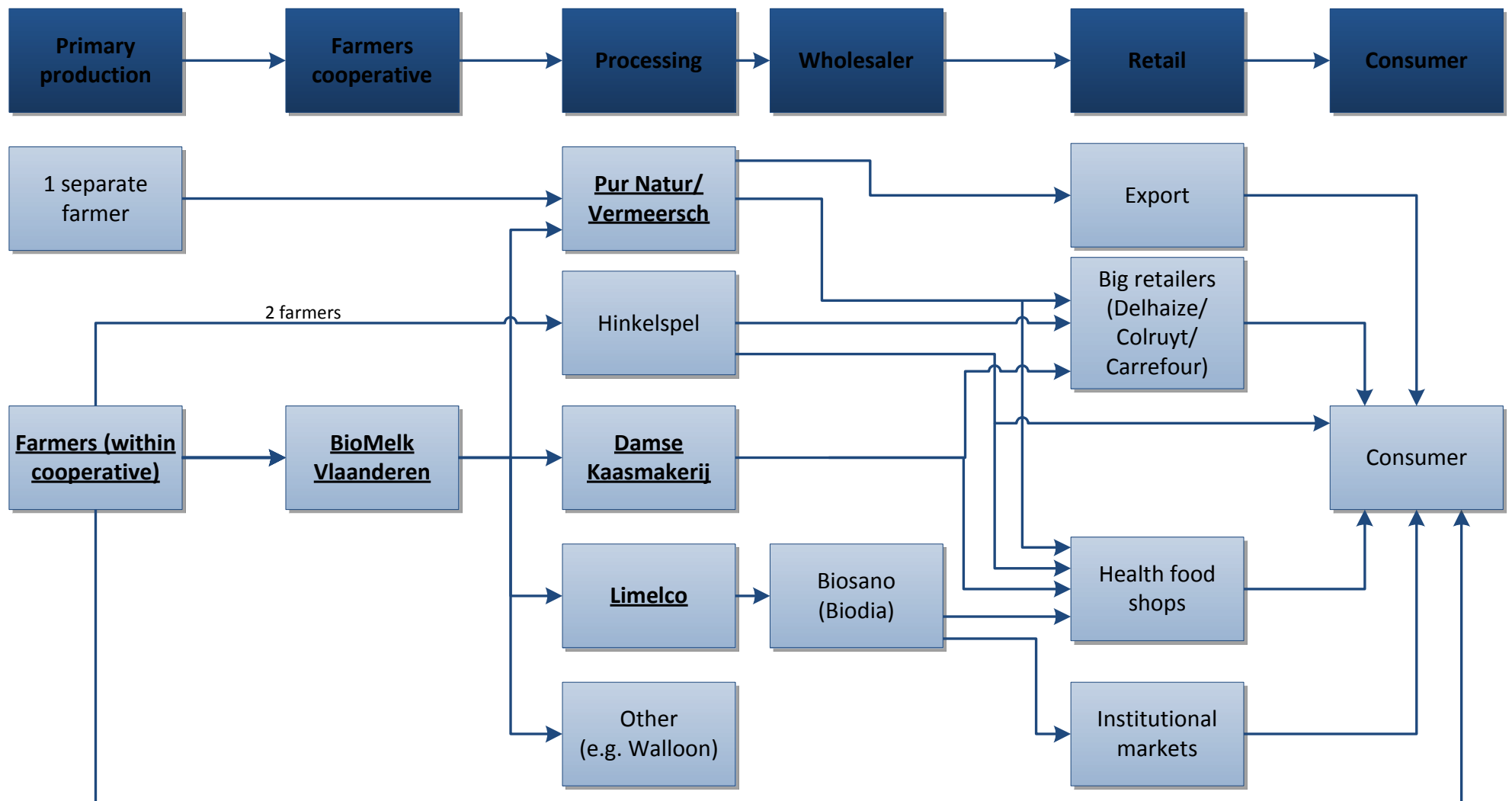


Figure 7: Mapped supply chain for organic milk and dairy in Flanders (in bold and underlined: the focal chain in this study) (Source: own compilation).

4.3. Conceptual subjects

In Table 3, an overview of the calculated overall scores per conceptual subject is given. The scores on the left side are based on the responses of the farmers and the cooperative about their relationship (F-C). The right side of Table 3 shows the overall scores for the relationship cooperative-processor (C-P). In general, we could conclude that actors within C-P do agree more compared to F-C where farmers generally scored lower than the cooperative. This trend was probably attributable to the very limited number of respondents within C-P. Next, scores for C-P are mostly higher than for F-C, suggesting that the relationship between the cooperative and processors functions better than between cooperative and farmers. However, again we should be very cautious with this statement since the number of respondents is too low to draw general conclusions from these results. For example, no farmer indicated a bad relationship with the cooperative. In the following sections, we go into more detail about each of the five conceptual subjects to explore these overall scores.

Table 3: Overall scores for the conceptual subjects concerning the relationships in the focal chain (left: farmer-cooperative; right: cooperative-processor).

	<u>Farmers</u>		<u>Cooperative</u>		<u>Cooperative</u>		<u>Processors</u>	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Goal alignment	3.64	1.33	6.00	-	6.00	-	5.70	0.42
Governance structure	3.66	1.07	4.90	-	4.40	-	4.91	1.00
Information sharing	4.02	1.30	4.85	-	4.90	-	5.29	0.61
Value chain integration	3.79	1.39	5.85	-	5.70	-	5.79	0.30
Value chain performance	4.51	1.03	4.55	-	4.75	-	5.11	0.16

4.3.1. Goal alignment

Within F-C, goal alignment was clearly scored lower by farmers than it was by the cooperative (3.64 vs. 6.00). Most farmers indeed indicated goal alignment as low or very low, a common problem in European organic chains (Naspetti et al., 2011). This misalignment is further confirmed by the different goal importance scores given by all chain actors, as shown in Figure 8 (*cf. infra*). According to the farmers, this divergence among the different partners is reflected by the difficult price negotiations since consumers and thus processors want to pay the lowest prices as possible. This lack of coherency was also mentioned by the chain manager of the cooperative:

“There is a need for a common vision and mission among all chain members. Nowadays everyone is working according to its own concerns which may be contradictory towards each

other, for example illustrated by the aim of our major processor to decouple farmers from the cooperative.”

Looking at the different statements for goal alignment, three out of five seemed to be inducing this discrepancy for F-C (see Table 4), while no remarkable differences appeared for C-P. Firstly, ‘goal harmonization’ was scored lower by farmers, indicating every one chooses its own major goals. For example, an attempt of the cooperative to attain fair trade organic milk failed because no farmer was willing to pursue some extra goals for it (e.g. soy bean-free feed). Also argued the cooperative:

“First of all we need a common long-term vision among the members of the cooperative. For example, there are some farmers aiming at a stronger collaboration with our major processor, while others fear their independence and want to search for additional marketing channels.”

Table 4: Means for each of the statements concerning goal alignment (left: farmer-cooperative; right: cooperative-processor).

	<u>Farmers</u>		<u>Cooperative</u>		<u>Cooperative</u>		<u>Processors</u>	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Goal clarity	4.71	2.36	6.00	-	6.00	-	5.50	0.71
Goal harmonization	3.83	1.94	6.00	-	5.00	-	6.00	0.00
Goal communication	5.00	1.63	6.00	-	6.00	-	6.00	0.00
Profit sharing	2.71	0.95	6.00	-	5.00	-	5.50	0.71
Risk sharing	2.71	1.38	6.00	-	5.00	-	5.50	0.71

Next, farmers strongly agreed on a low score for ‘profit sharing’ as each of them stated they are receiving only a minor part of the total chain earnings. According to them, downstream chain actors such as processors and especially the big retailers do gather most of the profit. Ameloot et al. (2003) illustrated this unfair revenue distribution in the Flemish organic dairy sector: for example, the added value per €100 costs once was 11% higher for the processors compared to the farmers and even respectively 70% and 57% higher for the distributors and health food shops. On the other hand, the cooperative had a lower added value since it does not pursue any profit and all their gains are paid back to the farmers. This is why, despite the fact that the cooperative admits the unfair prices for farmers, it scored high on ‘profit sharing’ in its F-C relationship. The cooperative is a successful mechanism for sharing profits generated by the total milk production among all farmers since losses due to sale of oversupplies on conventional markets are also equally shared. However, except for the

fixed milk price for one year currently obtained with the largest processor, it did not yet succeed in a completely fair distribution of revenues all over the chain. In general, Naspetti et al. (2011) concluded in their case study report that in none of the eight European organic chains under investigation a chain collaboration aimed at sharing benefits was successfully practiced. Remarkably, both processors in our study indicated that they think they earn a fair share of the chain profits. We could conclude that our respondents were right stating retailers use their bargaining power to steal some share of the total chain profits at the expense of farmers. The cooperative chain manager summarized it as such:

“In fact, we do not have any official up-to-date information about the income distribution along the chain, however, the general sense tells us the ratio investment/labor/risk compared to profit is more favorable downstream the chain.”

Since organic farming usually is considered to be more risky than conventional farming, Gardebroek (2006) statistically proved that organic farmers are less risk averse than their conventional colleagues. Our study confirmed this as farmers indicated that they take most of the risk in F-C. Throughout the entire organic chain, farmers take most – personal – risk as their business is very capital intensive while their income depends heavily on external factors such as weather conditions and animal health. Besides, in our chain, one processor buys almost all the organic milk which makes farmers also very dependent on this specific company. Finally, as the cooperative is managed by its own farmers, it does not have any financial potential to adopt some of the farmer's risks.

When looking at the importance the respondents gave to chain goals (based on Molnar (2010)), some clear differences could be distinguished. While farmers see 'efficiency' as a major goal (e.g. improving animals' productivity), the cooperative and processors do not attach much importance to it. This could be explained by the relatively higher production costs the farmers are facing (Ameloot et al., 2003). Their main purpose is trying to cut these costs since this is their only self-manageable way to increase their profit. Next, 'sustainability' was also scored high by farmers, which is logic since most switched to organic farming because of its lower environmental impact and higher animal welfare. Here the cooperative gave a zero score, but they stated this was because this is their farmers' responsibility since they cannot directly influence it. Reversely, 'fair prices', 'growth' and a 'well-integrated chain' seemed less important for farmers as these are the kinds of goals typically pursued by the cooperative in favor of the primary producer; indicated by their high scores given by the cooperative. Next to these, the cooperative formulated two additional important goals they pursue: an effective and efficient milk collection and the bundling of all Flemish organic milk in order to gain more bargaining power. Subsequently, because agri-food chains are typically depending on biological

production processes and limited product shelf lives – so only limited stocks are possible – (Aramyan et al., 2006), it takes a long time to increase or decrease the production volume which leads to a consensus about the low importance of ‘responsiveness’. Finally, all respondents scored high for quality since this is legally regulated by standards and certificates.

These different relative goal importances given by different chain members are in line with Molnar’s (2010) findings. She argued that identifying common goals by communicating your own goals towards chain partners is crucial in aligning supply chains. Kottila et al. (2010) also found values and interests of organic chain actors to be different, especially for the retailers where environmental sustainability seemed almost unimportant. These chains lacked one explicitly stated common goal. A German case study argued that cooperation between organic producers, processors and retailers should be improved, starting with a better and clearer strategic alignment and sharing of a common idea among all chain actors (Kvam and Bjørkhaug, 2014).

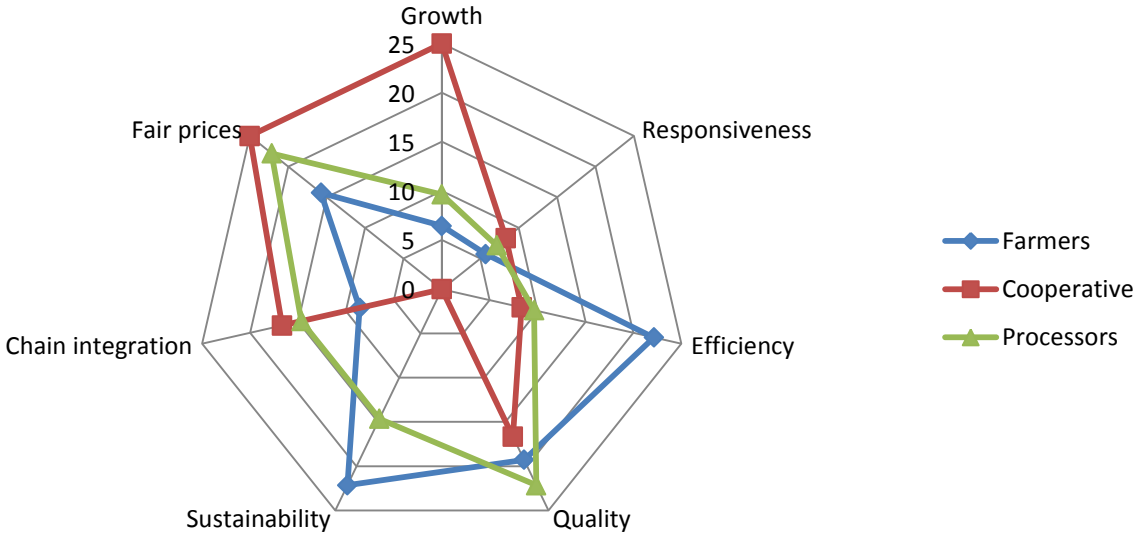


Figure 8: Chain goals' importance score given by farmers, cooperative and processors.

4.3.2. Governance structure

Again, the differences between the actors in F-C were bigger than for C-P (see Table 5). Asking the respondents which of the seven types of governance structure formulated by Molnar (2010) most corresponded to their relationships, very diverse answers were given. No one indicated the two extremes (‘spot market’ and ‘vertical integration’), but all other were mentioned at least once. According to Aertsens (2011), ‘spot markets’ in an organic chain would grant insufficient certainty to enter the market, especially for the farmers, while ‘vertical integration’ does not allow enough flexibility as is necessary in such an emerging market. So this author stated hybrid governance

structures are most suitable for organic markets, as also indicated by our respondents. Concerning F-C, all farmers doubted between a 'non-contractual relationship with a qualified partner' and a 'contractual relationship', while the cooperative called it a 'relation-based alliance'. This discrepancy was also suggested by the score for the statement 'use of contracts'; however, here the cooperative indicated to use more contracts. In reality, trust is the basis in their relationship while contracts with farmers are signed concerning agreements about product quality and terminating the relationship. Within C-P, a 'non-contractual relationship with qualified partners' was most complying as trust seemed again very important.

In their European organic agri-food survey, Naspetti et al. (2011) found that 42 of the 101 interviewed companies used long term contracts, while only 18 indicated to be vertically integrated. Therefore, Kvam and Bjørkhaug (2014) stated that European organic agri-food chains are structurally organized in many different ways. However, cooperatives among subsequent chain actors are most frequently occurring using various kinds of internal governance structures and mainly initiated by farmers. They concluded there is no 'one' model for successful development and growth.

The 'use of contracts' in order to share profit and risk in an uncertain environment such as agri-food chains is even no guarantee for success, demonstrated by the failure of the Walloon organic dairy cooperative as it went bankrupted paying the promised fixed price premiums to the farmers (Aertsens, 2011). Therefore, as also illustrated by the types of governance structure in practice, more important than the use of contracts is the strong existence of reciprocal 'trust' among organic chain partners as for example was the case in the successful foundation of the cooperation in the British organic dairy sector (Aertsens, 2011). In our study, farmers seemed to have less trust in the cooperative than reversely which could be probably attributed to the perceived lack of professionalism in negotiating better prices. For example, the cooperative in 2008 paid lower prices than the conventional milk price. However, most Flemish farmers wrongly compare with the Dutch organic dairy chain where higher prices are paid for higher milk standards. Besides, another cause of distrust farmers suggested was the deficient communication by the cooperative about the processors, creating a negative image of the latter among farmers. Finally, all other respondents scored rather high on 'trust', suggesting all chain actors are sequentially trusting their adjacent partners.

Next, most respondents indicated a low score for 'asset specificity' and 'relevance of identity', while Aertsens (2011) stated actors in the organic food chain are characterized by high specific investments (e.g. adapted stables or extra processing machines). However, it should be mentioned that

respondents in this study were asked about the ‘asset specificity’ concerning the relationship under investigation. A farmer explained:

“Indeed, I did some extra investments to switch to organic farming. However, most of these are not coupled to my relationship with the cooperative since I could still use them when I would leave the cooperative.”

When we would have targeted for example farmers about processing and selling dairy products at home, they would have made specific investments that would be lost when stopping their farm shop. Likewise, processors indicated a low level of ‘identity relevance’ as they would lose their marketing and packaging investments when quitting organic products. Therefore, many cooperatives in European organic agri-food chains held the reduction of risks due to asset specificity as one of their main goals (Aertsens, 2011).

Farmers indicated a higher ‘uncertainty level’ compared to the cooperative, since they are taking most of the risks (*cf. supra*). Primary producers in organic supply chains are typically facing more uncertainty since it is still an emerging market and hence still rather small and unstable. In the past, lots of initiatives were already started trying to decrease the uncertainty for organic farmers. For example, the cooperative went searching for extra customers, ensuring a guaranteed sale of their milk on the organic market as they reduced their dependency on one big customer (Aertsens, 2011).

Table 5: Means for each of the statements concerning governance structure (left: farmer-cooperative; right: cooperative-processor).

	<u>Farmers</u>		<u>Cooperative</u>		<u>Cooperative</u>		<u>Processors</u>	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Relevance of identity	2.71	2.06	4.00	-	3.00	-	5.00	1.41
Use of contracts	3.00	2.00	6.00	-	3.00	-	3.00	2.12
Trust	4.57	2.07	6.00	-	5.00	-	5.50	2.12
Asset specificity	1.57	0.79	3.00	-	3.00	-	2.00	1.41
Environmental uncertainty	4.00	1.73	2.00	-	5.00	-	5.00	1.41

4.3.3. Information sharing

Each overall score concerning information sharing was rather high (minimum 4.02), suggesting all chain actors are satisfied about the way they get information from their chain partners. Again the farmers generally gave the lowest scores, especially for ‘reciprocal flow’, ‘accessibility’ and

‘relevance’ (see Table 6). Other studies already confirmed that frequent and intense communication among chain actors is not always a prerequisite for bi-directionality and relevant content: quality outweighs quantity (Kottila and Rönni, 2008).

Nevertheless, during the further in-depth interviews, information sharing showed to be not as good as its scores suggested. Only basic and really necessary information (e.g. current prices) was passed on to other chain actors. The cooperative recently started sending letters to their farmers with information concerning the market, latest research... to improve communication towards farmers. However, as a farmer indicated:

“The effectiveness of such initiatives depends on farmers’ willingness to learn – which is mostly insufficient.”

A review of several case studies concerning organic food chains mentioned insufficient communication among chain actors as an important cause of chain malfunctioning (Kvam and Bjørkhaug, 2014). Similarly, Kottila (2009) found that most organic farmers in her study were satisfied about the level of knowledge sharing despite the fact that only a small portion of the necessary knowledge was shared, which is mostly the case in agri-food chains. Kottila and Rönni (2008) also concluded information sharing to be insufficient in their two organic cases, being one of the main barriers for growth of these markets (Kottila, 2009), as the lack of sufficient knowledge impedes conventional farmers to switch to the organic system (Baecke et al., 2002). Respondents in our study indicated the ‘fear of abuse’ and the ‘lack of trust’ in chain partners as main barriers to share information among chain members.

Table 6: Means for each of the statements concerning information sharing (left: farmer-cooperative; right: cooperative-processor).

	<u>Farmers</u>		<u>Cooperative</u>		<u>Cooperative</u>		<u>Processors</u>	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Completeness	4.00	1.91	4.00	-	5.00	-	5.50	0.71
Timeliness	4.14	1.57	5.00	-	5.00	-	4.00	0.00
Reciprocal flow	3.33	0.82	5.00	-	5.00	-	5.50	0.71
Reliability	4.43	1.81	5.00	-	5.00	-	5.50	0.71
Accessibility	3.57	1.90	5.00	-	4.00	-	5.50	0.71
Relevance	3.43	1.40	5.00	-	5.00	-	5.50	0.71
Tool used	4.57	2.23	5.00	-	5.00	-	5.50	0.71

The IT systems used by actors in this chain were the rather simple 'tools' such as telephone, fax or email. Merely for the data about milk quality, the same online databank of the conventional milk sector is used. Unlike other sectors where digital and electronic IT systems were adopted quickly, agri-foods chains barely make use of it (Canavari et al., 2010), especially the primary producers do not use it. However, last years they are under pressure to adopt it for example to improve their efficiency or because retailers or processors want to guarantee traceability (Liao et al., 2012). A successful example of the introduction of an electronic IT system is 'FarmingNet' in the Dutch organic pork sector, connecting all chain actors (Pocsai, 2012). Nevertheless, farmers in our study, whereof several even indicated no information is shared among chain partners, were quite skeptical concerning more digitalized techniques, despite the speed and volume of information it could provide (Prajogo and Olhager, 2012):

“We are farmers, we live and work outside. I'm not waiting to waste my precious time handling yet another tool on my computer to give me yet more information I cannot use. We farmers hate it to do administrative work.”

Since the Flemish government is aware of this skepticism, it introduced in their strategic plan for organic agriculture a unique way of information sharing among farmers. 'Biobedrijfsnetwerken' is an information exchange platform where farmers can share their knowledge with each other or could ask for external experts in order to be able to pursue growth and a better chain cooperation (van Liefferinge, 2013). Kottila (2009) suggested that this bi-directional horizontal information flow between farmers is a precursor for knowledge sharing with other chain actors. Research listed five reasons why European organic farmers should want to share information with their customers: product quality, on-time delivery, product safety, demand forecasts and prices and price changes (Naspetti et al., 2011); whereof the last two were the most indicated by the farmers in our study.

Finally, we concluded that knowledge was only shared within the dyadic level, i.e. with immediate suppliers and customers. This isolates farmers from further chain actors, especially from the retailers and consumers, which was also found by Kottila and Rönni (2008). Many farmers recognized the insufficient flow of knowledge to consumers, but they could not solve it on their own. This is another reason to cooperate within the chain since consumers' poor knowledge about organic food may be partially responsible for the gap between the real sales figures and the potential demand researchers are always stating (Kottila, 2009). In their review, Kvam and Bjørkhaug (2014) concluded that successful chains seemed to use a variety of communication channels to inform consumers and to gain feedback about the products.

4.3.4. Value chain integration

As seen in Table 3, farmers do not agree with the cooperative having a tight relationship (3.79 vs. 5.85), while in C-P both actors showed a similar high score on value chain integration (VCI). In general, lack of collaboration among chain members is reported frequently while studying the operation of organic agri-food chains (Naspetti et al., 2011). This was also the conclusion of Kottila et al. (2010) who found that European organic chains were too loosely integrated and hence not well-functioning systems. More specifically, collaboration existed in dyadic relations, as here in C-P, but not at the level of the whole agri-food chain. Since in Europe most organic products are sold by the mainstream retailers, the organic chain is a niche market penetrating in the conventional chain at the point of retail. However, in this relationship between low-scale organic producers and giant volume sellers, farmers are too dependent on the retailers making a strong reciprocal collaboration nearly impossible (Kottila and Rönni, 2008). According to our respondents, ‘lack of common goals’ and ‘unfair profit and risk sharing’ seemed to be VCI’s main barriers. Despite the fact that most argued not to be reluctant towards close chain collaboration, farmers in our study, in contrast to the other respondents, scored low on ‘collaborative spirit’ (see Table 7) which indicates that they are not waiting for collaboration among all chain actors. Quoted nicely by a farmer as:

“Farmers like to live on their own island.”

Table 7: Means for each of the statements concerning value chain integration (left: farmer-cooperative; right: cooperative-processor).

	<u>Farmers</u>		<u>Cooperative</u>		<u>Cooperative</u>		<u>Processors</u>	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Clear guidelines	5.33	2.16	6.00	-	6.00	-	5.00	1.41
Joint decisions	4.50	1.38	5.00	-	5.00	-	5.50	0.71
Joint problem solving	3.83	1.72	6.00	-	6.00	-	5.50	0.71
Commitment	2.43	0.98	6.00	-	6.00	-	6.00	0.00
Coordination	3.86	2.54	6.00	-	6.00	-	6.00	0.00
Shared resources	2.33	2.25	0.00	-	0.00	-	5.50	0.71
Collaborative spirit	3.57	0.98	6.00	-	5.00	-	5.50	0.71

Furthermore, all farmers also scored low on ‘commitment’, which indicates that they are not willing to do many efforts to make their relationships with the cooperative long lasting. As already indicated by the non-responding farmers in this study, most farmers do not have the time and willingness to

actively participate in the cooperative, although they do want to benefit from its services. Moreover, these farmers stated that this relationship already lasted for several years now – mostly even from the start of the cooperative – so intense commitment towards the cooperative was not necessary anymore. However, this seemed to be a dangerous attitude as Hingley (2005) proved long chain relationships were no guarantee for close chain collaboration.

Despite the cooperative pro-actively tries to counter problems (reflected by a score of 6), farmers indicated a lower score for 'joint problem solving' within F-C as they mentioned that the cooperative's role is mainly referring to external experts. Nevertheless, Petersen et al. (2005) mentioned 'joint problem solving' and 'joint decision making' as prerequisites for a strong collaboration. Jointly working together on common problems seems to be possible also in organic agri-food chains, as for example proved by an Austrian cooperation between an organic producer cooperative and a supermarket chain who developed new types of products together in order to increase consumers' demand (Kvam and Bjørkhaug, 2014).

Finally, 'coordination' got a low score by farmers either since they believe an organization is needed to fully coordinate the entire chain, wherefore the cooperative appeared to be the most suitable. However, regarding the divergent company goals and lack of communication between chain members, a fully coordinated chain seems hard to achieve. Nevertheless, the consensus among chain partners that was already obtained by the cooperative to prioritize Belgian instead of imported milk, shows that VCI within the Flemish organic dairy chain must be possible.

4.3.5. Value chain performance

Table 3 shows that scores concerning value chain performance (VCP) are rather similar among the chain actors for both relationships (4.51 vs. 4.55 for F-C and 4.75 vs. 5.11 for C-P). Though, there are some statements on which the respondents disagreed more (see Table 8). A first discrepancy handles about the 'logistic costs', a common problem within the European organic food sector as most chain actors are scattered around large geographical areas (Stolze et al., 2007). As mentioned before, fragmentation indeed is a main problem for the Flemish organic dairy cooperative. This makes the reduction of collection costs their major goal. Ameloot et al. (2003) calculated that the cooperative had to account a fee of €14 /100 liter to farmers for their services which was mainly attributable to the transportation costs. This explains why farmers in our study scored lower on logistic costs, as they are those paying the costs. The chain manager of the cooperative argued:

“High fuel prices in mind, we are trying to find some new farmers in order to reduce our transportation costs, as now we have to drive all around Flanders to visit all our farmers. Better would be if there are more farmers or when they would live in the same region.”

A possible solution for this problem a farmer suggested, was the introduction of production volume premiums stimulating farmers to supply higher volumes, hence lowering the fixed collection costs per liter.

Another known weakness of European organic farming is their high input costs (Stolze et al., 2007) impeding fair ‘profit margins’ as the usual organic price premiums are not always guaranteed. Grignard et al. (2013) concluded that Flemish organic dairy farmers differ from those in other European regions as their income per labor unit is significantly higher, but they are coping with higher input costs, due to higher feeding and labor costs (Ameloot et al., 2003). Trying to overcome these high production costs, the cooperative pursues fair and stable prices for its farmers likewise many other European organic cooperations (Kvam and Bjørkhaug, 2014). Price premiums provide higher milk prices compared to conventional farmers, though their income seemed to be similar due to the higher production costs. However, Ameloot et al. (2003) calculated higher profits per cow should be possible in organic dairy farming, so the challenge is to improve the valorization of organic food products along the chain (Grignard et al., 2013).

Table 8: Means for each of the statements concerning value chain performance (left: farmer-cooperative; right: cooperative-processor).

	<u>Farmers</u>		<u>Cooperative</u>		<u>Cooperative</u>		<u>Processors</u>	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Logistic costs	3.33	2.16	5.00	-	5.00	-	4.50	2.12
Profit	4.14	1.57	4.00	-	5.00	-	4.50	2.12
Lead time	3.50	2.59	3.00	-	3.00	-	2.50	2.12
Customer complaints	4.00	2.90	5.00	-	5.00	-	5.50	0.71
Food safety	5.33	1.97	5.00	-	5.00	-	6.00	0.00
Attractiveness	3.83	2.64	5.00	-	5.00	-	5.50	0.71
Environmental friendliness	4.17	2.40	5.00	-	5.00	-	5.50	0.71
Customer satisfaction	4.50	2.88	5.00	-	5.00	-	6.00	0.00
Volume flexibility	4.00	2.45	2.00	-	2.00	-	5.00	1.41

All respondents agreed on a low score for 'lead time', corresponding to the low importance score 'responsiveness' got as chain goal (see Figure 8). Similarly, the cooperative scored very low on 'volume flexibility' since milk production is dependent on biological processes, meaning production capacity is rigid as cows produce each day circa the same amount of milk. This formerly forced the cooperative to sell oversupplies on the conventional market losing price premiums and their profit (Aertsens, 2011), while nowadays no extra farmers are found to fill the undersupply.

Finally, high scores were found for 'environmental friendliness' as it is one of the main incentives of organic farming. Grignard et al. (2013) argued organic dairy farmers indeed performed significantly better on environmental issues compared to their conventional colleagues. However, in Flanders they maintained higher N-balances and greenhouse gas emissions compared to other regions, which suggests the more intensive character of Flemish organic dairy farming.

4.4. Research questions

Since no statistical analysis was performed, the following section tries to approve the proposed research questions using the qualitative data obtained during the in-depth interviews as well as the data found in literature.

4.4.1. RQ1: Goal alignment positively affects value chain integration

Kottila et al. (2010) argued that coherency among chain actors is an important factor in increasing actors' commitment to the organic system, hence paving the way for a more collaborative valuable production. Our respondents indicated goal misalignment as a main barrier to collaboration or as a farmer in our study replied:

“As long as farmers, cooperative, processors and even wholesalers and retailers are not pursuing more or less the same goals, it seems impossible to go to a close collaboration along the chain.”

Though all chain actors agreed with this statement, a case study review in eight European countries showed a very low level of incentive alignment in organic agri-food chains, resulting in lower collaboration (Naspetti et al., 2011). According to Stevenson (2009), one of the main success criteria for growth of organic chains is a clear business philosophy and objective, resulting in a common long-term strategy shared by all chain actors. Therefore, Aertsens (2011) concluded common goals should be first pursued within the Flemish organic dairy cooperative to be later on extended among all chain actors. By doing so, this chain could achieve a better collaboration and ultimately a higher VCP.

Next, chain actors' perceived risk seemed to be another important driver towards closer collaborative relationships as higher perceived risk levels were accompanied by closer relationships in the European organic agri-food chains (Naspetti et al., 2011). According to Aertsens (2011), risk sharing in our focal chain truly would lead to higher collaboration. This was also suggested by farmers in our study since they argued that they take most of the risk, while wholesalers and retailers take most of the profit:

“We as farmers are not rewarded for the risks we are taking. As in most cases, the primary producer is abused, so how could we ever have strong relationships with them if they keep on working like this.”

The cooperative stressed the inverse correlation as according to them stronger chain integration would lower the risks for farmers:

“Strong and trustful relationships would decrease the uncertainty levels and farmers would be more able to consider long-term investments.”

Next, also profit sharing seemed to be a considerable prerequisite of good chain integration as farmers in our study indicated that an unfair distribution of revenues is a main barrier for a better VCI; while processors thought profit was equally distributed. Actions are necessary to guarantee fair incomes, as for example in China where revenue sharing contracts in the dairy sector created a win-win situation as revenues increased all over the chain, especially for the farmers (QIAN et al., 2013). To our believes, in the case of the Flemish organic dairy sector the cooperative should play a major role in this. The cooperative aiming at a fixed organic milk price for example enables farmers pursuing a long-term vision as their income is guaranteed for at least one year. These kinds of efforts could help the chain to get to a closer collaboration as a farmer argued:

“Processors doing some efforts guaranteeing better prices make us more willing to do something in reverse as for example promoting the processors' organic brand by organizing guided tours on our farm.”

Finally, we could conclude from our study that 'goal alignment' and 'risk and profit sharing' indeed are very important precursors to go to a better VCI.

4.4.2. RQ2: Governance structure positively affects value chain integration

The conclusion of Aertsens (2011) concerning organic agri-food chains was that they would benefit most from hybrid governance structures since they minimize transaction costs and enable strong relationships creating a win-win situation. A similar reasoning was followed by one of the farmers in our study:

“Spot markets do not give me enough supply certainty and it would take too much time and money to renegotiate every transaction separately, while vertical integration would make us puppets of the agro-industrials as we would become too dependent on them.”

Indeed, the level of chain formalization, i.e. moving further on the vertical coordination continuum (*cf. supra*), was unilaterally related to the level of collaboration, unless integration was achieved at the expense of independence as in case of strict vertical integration (Naspetti et al., 2011). Schulze et al. (2006) concluded that agri-food chains would benefit from stopping the trend going to strict vertical coordination. Instead they should be pursuing independent companies with long-term chain relationships based on trust since mutual trust is the number one prerequisite for a strong collaboration (Kottila and Rönni, 2008). At the other extreme, spot markets showed to be ineffective as well since those with most bargaining power take most of the profit (QIAN et al., 2013). So like Naspetti et al. (2011) who could not support their similar hypothesis, we conclude from our study an inverse U-shaped relationship exists between the level of formalization along the chain and the level of collaboration among all chain partners: hybrid governance structures outperform both extremes (Figure 9).

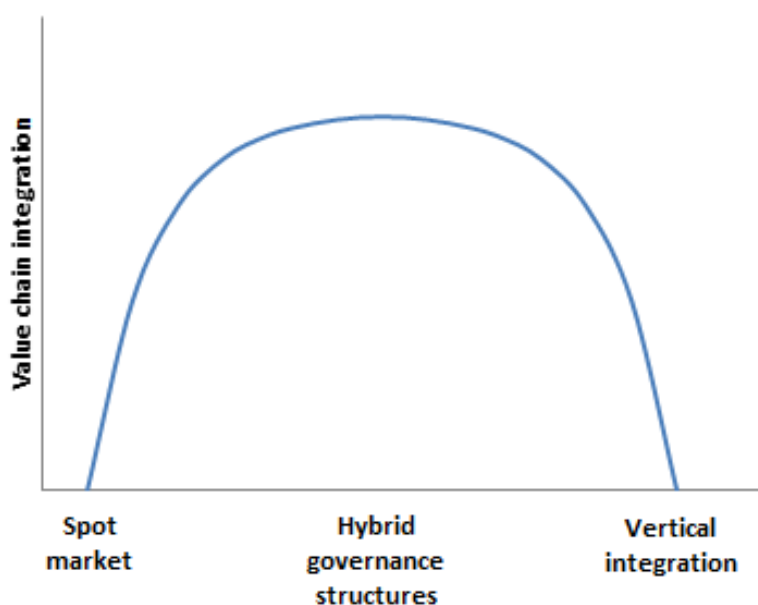


Figure 9: Relationship between governance structure and value chain integration (Source: own compilation).

4.4.3. RQ3: Information sharing positively affects value chain integration

A bi-directional flow of information between all chain partners should lead to higher VCI (Petersen et al., 2005), as also confirmed by Naspetti et al. (2011) concerning European organic agri-food chains. According to these authors, information sharing therefore is an essential element of inter-organizational relationships among all members of a chain. Since it positively influences VCI, there is a need for more intense and qualitative information exchange in organic supply chains (Kottila et al., 2005). More specifically for our focal chain, knowledge sharing among farmers and other chain actors would lead to more collaboration along the chain and hence to a lower need of labor and higher revenues (Ameloot et al., 2003). According to Aertsens (2011), more communication among chain partners could better match demand and supply avoiding the organic surpluses and shortages. So, we could conclude that information sharing in the Flemish organic dairy sector should be improved enabling closer collaboration. A farmer argued:

“The more we know from each other, the better for everyone, preventing us acting as separate units distrusting each other.”

Recently, several European organic food organizations admitted the problematic quality of information sharing in their sector and hence established ‘OrganicDataNetwork’. This project aims to increase transparency in the European market for organic food by improving market data collection methods and hence improving information availability and relevance (Willer and Lernoud, 2014).

However, as they both enhance each other (Li and Lin, 2006), this correlation between information sharing and collaboration seems to suffer the dilemma of which one should come first. Since lack of trust and fear of abuse among chain members were the main barriers for information sharing, we argue that rather inversely close collaborations should be used to improve chain communication. Using the responses we gathered during this study, we also presume in the case of the organic milk chain in Flanders, that it would be better to use an intense VCI – hence obtained by other means – as a starting point for the sharing of knowledge. In turn this would enhance again chain collaboration, starting a vicious circle of improvement. Closer chain collaboration should overcome the perceived lack of trust and abuse.

4.4.4. RQ4: Value chain integration positively affects chain performance

The general importance of strong collaborative relationships and a well-integrated supply chain as a mechanism to improve the overall chain performance has been widely proven (Welker et al., 2008). Despite the fact that their actual levels were still too low, higher levels of trust and collaboration also seemed to induce higher VCP levels for organic agri-food chains. Nevertheless, this correlation did

not exist for the performance attributes concerning food quality and safety (Naspetti et al., 2011). Well-performing traditional food chains showed better relationships among chain members compared to low-performing ones, especially regarding the economic and social satisfaction (Molnar, 2010). From their review of European organic chains, Kvam and Bjørkhaug (2014) found several benefits from close relationships: cooperation in product development and marketing, preventing conflicts due to joint problem solving and increased learning due to knowledge sharing. However, some organic chain actors seemed reluctant towards integrating till marketing level since they consider it as a danger for their independence (Naspetti et al., 2011). As all these benefits make organic chains functioning more efficiently and coherently, reinforcing their ability for sustainable growth (Kvam and Bjørkhaug, 2014), we could conclude that supply chains with a high level of VCI are desirable for improved VCP.

Many organic chain actors still do not consider a lack of VCI as a disadvantage for their company (Naspetti et al., 2011). Nevertheless, the niche market of organic dairy products, with a turnover in the EU of about only 5% (Willer and Lernoud, 2014), could truly benefit from a close collaboration providing economies of scale as the individual company level is often too limited (Stolze et al., 2007). Kottila et al. (2005) also concluded that stronger integration among chain partners was needed in order to increase the VCP in small markets as the European organic food sector. Hence, the implication for the small organic chain actors is to consider the influence of their actions within the whole organic agri-food chain, not only on the adjacent actors in the chain, and especially to improve their relationships with the mainstream retailers (Kottila and Rönni, 2008). Stevenson et al. (2011) concluded that strong relationships of farmers with processors, retailers and even consumers are the main factor to gain success as a small food supply chain. Hence, we conclude that networking both horizontally and vertically appears to be critical in the success of organic food producers (Kottila and Rönni, 2008).

In the case of the Flemish organic dairy chain, Aertsens (2011) argued that a higher degree of cooperation is needed in such emerging markets to increase their chain's flexibility. A closer collaboration could preclude the common boom and bust cycles preventing over- and undersupplies since demand and supply would be better matched. Besides one, all respondents in our study admitted that stronger VCI would help the entire supply chain performing better. Moreover, one processor mentioned:

“In fact, rather close chain relationships already exist. However, the total production volume remains far too low in order to really go to a well-integrated chain able to improve our chain performance – especially regarding retail.”

The same problem of a too limited market size was also highlighted by Ameloot et al. (2003). These authors suggested that stronger horizontal and vertical collaboration along the chain would create economies of scale, preventing their biggest problem: the fragmentation around Flanders. Consequently, logistic costs could be lowered improving farmers' profit and lowering the ultimate consumer price which would stimulate demand. Nevertheless, some organic dairy farmers are against this sector growth since they fear following the trend of conventional farmers shifting towards more intensive agro-industrial farming. According to these farmers, intensifying would infringe the concept of organic food production.

According to Naspetti et al. (2011), one plausible way to achieve this essential growth of the organic food sector, is focusing on improving collaboration and trust with truly strategic chain partners adding most value, as Petersen et al. (2005) argued. Within these strategic partnerships, the level of information sharing and joint decision making should be significantly improved and each chain actor should establish clear action paths in pursuing common chain goals and performance levels. Shared vision and values and inter-organizational trust ensuring qualitative information sharing is decisive in creating such strategic partnerships. Each chain member should show commitment to the relationship, so that appropriate profit margins, fair revenue distribution and long-term business relations are guaranteed (Stevenson, 2009). Nevertheless, as in general for most European organic agri-food chains (Naspetti et al., 2011), actual levels of collaboration, information sharing and goal alignment seemed to be too low to enable such stable strategic partnerships. Also Kvam and Bjørkhaug (2014) concluded from their review of European organic agri-food markets that chain partners sharing the same basic values should be chosen in order to develop mechanisms for building trust, transparency and joint decision making. Having close chain relationships is crucial for small scale food chains, ensuring fair prices and social sustainability (Stevenson et al., 2011). However, building such a strong chain integration with strategic chain partners is difficult and resource intensive (Naspetti et al., 2011).

An example of strategic partnerships in organic food chains was found in the USA where some organic traders assisted farmers with the transition to the organic system, providing a strong relationship among chain partners from the earliest start. The organic sector as a whole could benefit from this partnership as supply deficits were prevented (Dimitri and Oberholtzer, 2009). However, these authors also mentioned that the risk for farmers was again getting too dependent on the big agro-industrial companies.

Finally, Kvam and Bjørkhaug (2014) found in their review that all organic case studies showed trust as a precursor for setting up a successful chain. Therefore, we conclude that trust seems to be the most

important factor in small value chains such as the Flemish organic dairy sector. Creating transparency and trust among all chain actors is a prerequisite for these chains in order to handle the problems originating from their limited scope. Otherwise, the dilemma of the egg and the chicken, as denominated by Baecke et al. (2002), will never be solved. In order to secure this necessary growth, the cooperative, with its chain manager in front, should function as a chain-overarching coordinator taking the lead in this endeavor towards closer chain integration. A first step should be gathering all chain actors' interests and formulating a commonly shared vision and mission. Open communication among chain actors using electronic IT systems could help them achieving these common goals. Until now, the cooperative aimed at close horizontal collaboration among farmers, but more attention should be paid to strong vertical relationships linking strategic chain partners. By doing so, higher VCP levels could be aimed which would result in lower logistic costs and higher farmer profit margins – their two current main objectives. Most respondents in this study were hopeful in achieving this crucial growth. According to them, organic farming will become more important in the future since agriculture's pressure on nature is still increasing, reaching its inherent limits. Furthermore, they consider the abolition of the dairy quota in 2015 as an opportunity because they think that some farmers will choose for organic farming rather than following the trend of evolving to industrial farming.

As final conclusion, we could state that if growth is obtained, the Flemish organic dairy sector could strongly benefit from the positive relationship between VCI and VCP. A first step towards this chain collaboration is already planned: in June all chain actors will meet in order to jointly impose a long-term chain vision taking into account everyone's opinions. Hopefully this will be a first step of an auspicious future.

CHAPTER 5. CONCLUSION

5.1. General conclusion

In this final chapter, we summarize the main conclusions of this study concerning the four research questions that were proposed in the conceptual framework. Firstly, we found that ‘goal alignment’ is one of the most important prerequisites for achieving better value chain integration (VCI). As long as all chain actors do not pursue shared objectives and values, no common strategic direction can be followed, hampering close inter-organizational collaboration. Furthermore, it seemed to be crucial that profit as well as risk is distributed equally along the chain since altruistic behavior, i.e. a policy that is not optimal for yourself but optimal for the global value chain performance (VCP), can be considered as the basis for creating well-integrated value chains.

Secondly, as other authors already mentioned, the level of formalization of ‘governance structures’ is not unilaterally correlated to the level of collaboration. Spot markets generate too much uncertainty, while strict vertical coordination impairs chain actors’ independence. Therefore, we concluded that an inverse U-shaped relationship exists between chain formalization and VCI. This means that hybrid governance structures are most suitable, especially for emerging markets as organic agri-food chains.

Next, we concluded that the level of ‘information sharing’ among chain partners is positively related to the level of VCI. Moreover, communication quality outweighs its quantity, which means that more attention should be paid to the reciprocity and relevance of information shared. However, since the lack of trust appeared to be an important barrier for information sharing, the inverse correlation is more likely to happen. Hence, we presume that higher levels of chain collaboration are needed to ensure better communication, which in turn would lead again to closer collaboration.

Finally, like many other studies, we found that higher levels of VCI should lead to better VCP. Especially for limited scope supply chains, close collaborating chain actors could strongly benefit from economies of scale. We could conclude that VCI creates a gain for the entire value chain, so self-sacrifice for those who should re-adopt their goals, share their profits or increase their level of confident information sharing, is not an issue as every chain partner benefits from closer chain collaboration. A recommended way for achieving VCI, hence also improving chains’ competitive advantage, could be creating strategic partnerships with most valuable partners. Within this partnership, coordination should ensure qualitative information sharing and goal alignment, hence improving chain’s collaboration. In the case of the organic dairy sector in Flanders, the cooperative should take the lead to be this coordination center in order to reach higher levels of VCP and thus lowering logistic costs and improving profit margins.

5.2. Limitations and further research

This master thesis suffers from some limitations that are worth mentioning. First of all, the scope of this study was very limited as answers of only 10 respondents could be used for analysis. To begin with, the focal value chain of organic milk in Flanders is a small niche market with only a very few chain actors acting in it. Moreover, many of these chain actors were hard to persuade to participate in this study as they indicated not to be interested in this kind of research. Therefore, some more case studies should be performed using other value chains. A first interesting additional study could be the study concerning the conventional milk chain in Flanders. These results could then be closely compared to the results found in our study. Also other organic (dairy) agri-food chains in Europe could reveal interesting similarities and/or differences. Furthermore, more research using this conceptual framework needs to validate the conclusions from this study concerning the proposed research questions. Next, the conceptual framework could be extended with other factors enhancing value chain integration or even other factors improving the overall chain performance. Moreover, additional attributes for each of the five conceptual subjects could be examined.

Secondly, the scope of this study should be further extended by exploring more relationships up- and downstream our focal chain. As only three chain levels were interviewed in this study, no data could be used concerning farmers' input suppliers and wholesalers and retailers. As each of these companies is a member of the organic agri-food chain, ideally all of them should be participating in value chain research in order to be able to pose complete conclusions.

Finally, more respondents are needed to justify statistical analysis. Our questionnaire initially was composed to be used in quantitative analysis revealing statistical evidences of the proposed research questions. Nevertheless, the lack of sufficient respondents caused the data to be statistically distorted, hence a case study approach had to be used for this study. Choosing more extensive (agri-food) chains could ensure the opportunity to interview more actors at each chain level so that research questions could be statistically analyzed.

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APPENDIX: QUESTIONNAIRE

1. ALGEMENE BEDRIJFSGEGEVENS

1.1. Naam van uw bedrijf:

1.2. Welke schakel in de keten bent u?

- a) Melkveehouder
- b) Tussenschakel
- c) Verwerker
- d) Distributeur
- e) Detailhandel
 - Supermarkt
 - Natuurvoedingswinkel
 - Andere? Zoja, welke?
- f) Consument
- g) Andere? Zoja, welke?

1.3. Locatie (gemeente + provincie) van uw bedrijf?

1.4. Welke zijn uw belangrijkste leveranciers in de biologische melk- of zuivelketen en welke zijn uw belangrijkste afnemers?

a. Leveranciers:

b. Afnemers:

2. CONFORMITEIT VAN DE BEDRIJFSDOELSTELLINGEN

2.1. Is er een overkoepelend orgaan dat de biologische melkketen dirigeert? Zoja, dewelke en wat is hun invloed op uw bedrijfsvoering? Indien niet, zou u dit wensen en waarom wel/niet?

2.2. Welke doelstellingen streeft uw bedrijf na? Gelieve onderstaande doelstellingen een score te geven naarmate ze binnen uw bedrijf belangrijk zijn door 100 punten te verdelen over de verschillende doelstellingen (Vb. efficiëntie belangrijkst, gevolgd door kwaliteit en milieuvriendelijkheid).

Bedrijfsdoelstellingen	Score	Score voorbeeld
Groei (marktaandeel vergroten, omzet vergroten, ...)		5
Responsiviteit (zo snel mogelijk aan de wensen van klanten/afnemers voldoen)		5
Efficiëntie (productie maximaliseren met minimale kosten)		25
Kwaliteit van het product (voedselveiligheid, aantrekkelijkheid, ...)		20
Milieuvriendelijke productie, dierenwelzijn, ...		20
Duurzame samenwerking met mijn ketenpartners		10
Eerlijke verloning, eerlijke prijzen		15
Andere? Zoja, welke?		0
TOTALE SCORE	100	100

2.3. In welke mate vindt u dat alle bedrijfsdoelstellingen van de verschillende schakels over de ganse keten op elkaar zijn afgestemd?

Zeer laag Laag Neutraal Hoog Zeer hoog

2.4. Indien u laag of zeer laag antwoordde, waar zit volgens u het probleem?

2.5. Denkt u dat u een eerlijk aandeel van de totale winsten in de keten toebedeeld krijgt?
Ja / Nee

2.6. Indien u nee antwoordde, waar denkt u dat het merendeel van de winst naar toe gaat en waarom?

2.7. Gelieve bij elk van volgende stellingen aan te geven in welke mate deze voor de samenwerking met uw leverancier(s)/afnemer(s) van toepassing zijn (1 = helemaal niet akkoord; 7 = helemaal akkoord). Gelieve ook het relatieve belang van elke stelling volgens u aan te geven door 100 punten te verdelen over de verschillende stellingen.

Conformiteit van de bedrijfsdoelstellingen	Score	Uw leverancier(s)							Uw afnemer(s)							Niet van toepassing
	100 punten te verdelen	Helemaal NIET akkoord							Helemaal NIET akkoord							
Duidelijkheid: De doelstellingen van uw leverancier/afnemer zijn voor u verstaanbaar en duidelijk		1	2	3	4	5	6	7	1	2	3	4	5	6	7	

Afstemming: De doelstellingen van uw leverancier/afnemer zijn afgestemd op de doelstellingen die uw bedrijf wenst na te streven en werden in samenspraak met u en andere partners opgesteld		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Communicatie: De doelstellingen van uw leverancier/afnemer werden door hen duidelijk aan u gecommuniceerd en zijn door u dus gekend		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Winstdeling: Zaken doen met mijn leverancier/afnemer zorgt ervoor dat de winsten eerlijker verdeeld worden over de ganse keten		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Risicodeling: Zaken doen met mijn leverancier/afnemer zorgt ervoor dat de risico's eerlijker verdeeld worden over de ganse keten		1 2 3 4 5 6 7	1 2 3 4 5 6 7	

3. ORGANISATIONELE STRUCTUUR VAN DE KETEN

3.1. Gelieve bij elk van volgende stellingen aan te geven in welke mate deze voor de samenwerking met uw leverancier(s)/afnemer(s) van toepassing zijn (1 = helemaal niet akkoord; 7 = helemaal akkoord). Gelieve ook het relatieve belang van elke stelling volgens u aan te geven door 100 punten te verdelen over de verschillende stellingen.

Organisationele structuur	Score	Uw leverancier(s)		Uw afnemer(s)		Niet van toepassing
	100 punten te verdelen	Helemaal NIET akkoord	Helemaal akkoord	Helemaal NIET akkoord	Helemaal akkoord	
Eigen identiteit: Het veranderen van leverancier/afnemer brengt hoge kosten met zich mee		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Gebruik van contracten: Alle transacties met uw leverancier/afnemer worden in concrete contracten vastgelegd		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Vertrouwen: Uw leverancier/afnemer houdt zich aan alle afspraken en is eerlijk, oprecht en volledig te vertrouwen		1 2 3 4 5 6 7		1 2 3 4 5 6 7		

Specificiteit van de investeringen: Voor de samenwerking met uw leverancier/afnemer was u genoodzaakt om specifieke investeringen te maken die verloren gaan wanneer de samenwerking stopt		1 2 3 4 5 6 7 Zoja, welke?	1 2 3 4 5 6 7 Zoja, welke?	
Onzekerheid: Transacties met uw leverancier/afnemer gaan gepaard met een grote onzekerheid omtrent prijzen, hoeveelheden, wetgeving...		1 2 3 4 5 6 7	1 2 3 4 5 6 7	

3.2. Hoe zou u zelf uw samenwerking met uw leverancier omschrijven? Vink voor zowel uw relatie met uw leverancier en uw afnemer één van volgende omschrijvingen aan.

	Leverancier(s)	Afnemer(s)
Spot market		
Uw bedrijf onderhandelt iedere transactie met uw leverancier/afnemer apart tegen de dan heersende marktprijzen		
Non-contractual relationship with non-qualified partner		
Uw relatie met uw leverancier/afnemer is gebaseerd op vertrouwen (dus niet via een contract), onafhankelijk of uw partner de nodige certificaties heeft		
Non-contractual relationship with qualified partner		
Uw relatie met uw leverancier/afnemer is gebaseerd op vertrouwen (dus niet via een contract), op voorwaarde dat uw partner de nodige certificaties heeft		
Contractual relationship		
Uw relatie met uw leverancier/afnemer ligt vast in contracten omtrent prijzen, kwaliteit, leveringstijdstippen,...		
Relation-based alliance		
Uw relatie met uw leverancier/afnemer is gebaseerd op gemeenschappelijke doelstellingen die uw bedrijf samen met uw partners ontwikkelde		
Equity-based alliance		
De samenwerking tussen u en uw leverancier/afnemer steunt op het feit dat u elkaars productiemiddelen kunt gebruiken wanneer nodig		
Vertical integration		
Uw bedrijf is volledig verticaal geïntegreerd met uw leverancier/afnemer		

4. UITWISSELEN VAN INFORMATIE

4.1. Deelt u bepaalde van de door u verkregen informatie met uw ketenpartners? Ja / Nee

4.2. Zoja, welke informatie wisselt u uit met uw leveranciers?

- a) Wensen van uw klanten doorgeven
- b) Verkoopvoorspellingen
- c) Prijsveranderingen en hun oorzaak
- d) Andere? Zoja, welke?

4.3. Zoja, welke informatie wisselt u uit met uw afnemers?

- a) Wensen van leveranciers doorgeven
- b) Productievoorspellingen
- c) Prijsveranderingen en hun oorzaak
- d) Andere? Zoja, welke?

4.4. Gelieve bij elk van volgende stellingen aan te geven in welke mate deze voor de samenwerking met uw leverancier(s)/afnemer(s) van toepassing zijn (1 = helemaal niet akkoord; 7 = helemaal akkoord). Gelieve ook het relatieve belang van elke stelling volgens u aan te geven door 100 punten te verdelen over de verschillende stellingen.

Uitwisselen van informatie	Score	Uw leverancier(s)		Uw afnemer(s)		Niet van toepassing
	100 punten te verdelen	Helemaal NIET akkoord	Helemaal akkoord	Helemaal NIET akkoord	Helemaal akkoord	
Volledigheid: Uw leverancier/afnemer deelt voldoende nuttige (en nodige) informatie met u		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Tijdigheid: Uw leverancier/afnemer verstrekt u nuttige informatie op tijd (en dus niet wanneer het te laat is)		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Wederkerigheid: Informatie wordt in beide richtingen uitgewisseld (dus zowel u met uw leverancier/afnemer als zij met u)		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Betrouwbaarheid: U vertrouwt erop dat uw leverancier/afnemer correcte informatie met u deelt		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Toegankelijkheid: U hebt eenvoudig toegang tot de door u gewenste informatie van uw leverancier/afnemer		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Relevantie: De informatie die uw leverancier/afnemer met u deelt is relevant en bruikbaar voor u		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Gebruik van tools: U gebruikt specifieke technologische instrumenten (vb. email, fax, gemeenschappelijke databases,...) om informatie met uw leverancier/afnemer uit te wisselen		1 2 3 4 5 6 7 Welke instrumenten gebruikt u?		1 2 3 4 5 6 7 Welke instrumenten gebruikt u?		

4.5. Welke zijn voor u mogelijke drempels om informatie uit te wisselen met uw leverancier/afnemer? (1 = helemaal niet akkoord; 7 = helemaal akkoord)

Drempels voor het uitwisselen van informatie	Uw leverancier(s)		Uw afnemer(s)		Niet van toepassing
	Helemaal NIET akkoord	Helemaal akkoord	Helemaal NIET akkoord	Helemaal akkoord	
<i>Schrik dat uw informatie zal worden misbruikt</i>	1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>Slecht functionerende infrastructuur voor de uitwisseling van informatie</i>	1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>Gebrek aan vertrouwen in uw partner</i>	1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>Heeft volgens u geen nut</i>	1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>U bent niet bereid tot het delen van vertrouwelijke informatie</i>	1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>Onvoldoende ontwikkeld IT systeem</i>	1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>Andere? Zoja, welke?</i>	1 2 3 4 5 6 7		1 2 3 4 5 6 7		

5. **KETENRELATIES**

5.1. Gelieve bij elk van volgende stellingen aan te geven in welke mate deze voor de samenwerking met uw leverancier(s)/afnemer(s) van toepassing zijn (1 = helemaal niet akkoord; 7 = helemaal akkoord). Gelieve ook het relatieve belang van elke stelling volgens u aan te geven door 100 punten te verdelen over de verschillende stellingen.

Ketenrelaties	Score 100 punten te verdelen	Uw leverancier(s)		Uw afnemer(s)		Niet van toepassing
		Helemaal NIET akkoord	Helemaal akkoord	Helemaal NIET akkoord	Helemaal akkoord	
<i>Duidelijke richtlijnen:</i> U krijgt van uw leverancier/afnemer duidelijke richtlijnen mee van wat zij van u verwachten		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>Beslissingen nemen:</i> U neemt belangrijke beslissingen (die betrekking hebben op de werking van de ganse keten) steeds samen met uw leverancier/afnemer		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
<i>Problemen oplossen:</i> U probeert belangrijke problemen (die betrekking hebben op de werking van de ganse keten) steeds samen met uw leverancier/afnemer op te lossen		1 2 3 4 5 6 7		1 2 3 4 5 6 7		

Toewijding: U steekt veel moeite en tijd in de relatie met uw leverancier/afnemer omdat u wil dat deze lang standhoudt		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Coördinatie: Uw activiteiten zijn afgestemd op deze van uw leverancier/afnemer en u werkt daarvoor nauw samen met elkaar		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Gemeenschappelijk gebruik van middelen: U deelt productiemiddelen met uw leverancier/afnemer wanneer dit nodig blijkt		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Ingesteldheid: U vindt een intense samenwerking met uw leverancier/afnemer belangrijk en deelt daarom uw kennis en waarden met uw partners		1 2 3 4 5 6 7	1 2 3 4 5 6 7	

5.2. Welke zijn voor u mogelijke drempels om een nauwe samenwerking met uw leverancier/afnemer tot stand te brengen? (1 = helemaal niet akkoord; 7 = helemaal akkoord)

Drempels voor een nauwe samenwerking doorheen de keten	Uw leverancier(s)	Uw afnemer(s)	Niet van toepassing
	Helemaal Helemaal NIET akkoord akkoord	Helemaal NIET akkoord Helemaal akkoord	
Niet bereid tot een nauwe samenwerking met uw leverancier/afnemer	1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Onduidelijke richtlijnen van uw leverancier/afnemer	1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Onvoldoende op elkaar afgestemde doelstellingen	1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Oneerlijke winst- of risicodeling	1 2 3 4 5 6 7	1 2 3 4 5 6 7	
U ziet geen voordeel in een samenwerking met uw leverancier/afnemer	1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Niet bereid tot het delen van informatie met uw leverancier/afnemer	1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Slecht ontwikkelde relatie met uw leverancier/afnemer	1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Andere? Zo ja, welke?	1 2 3 4 5 6 7	1 2 3 4 5 6 7	

6. PERFORMANTIE

6.1. Denkt u dat een nauwere samenwerking in de keten kan leiden tot een hogere performantie voor uw bedrijf? En waarom?

6.2. Gelieve bij elk van volgende stellingen aan te geven in welke mate deze voor de samenwerking met uw leverancier(s)/afnemer(s) van toepassing zijn (1 = helemaal niet akkoord; 7 = helemaal akkoord). Gelieve ook het relatieve belang van elke stelling volgens u aan te geven door 100 punten te verdelen over de verschillende stellingen.

Performantie	Score	Uw leverancier(s)		Uw afnemer(s)		Niet van toepassing
	100 punten te verdelen	Helemaal NIET akkoord	Helemaal akkoord	Helemaal NIET akkoord	Helemaal akkoord	
Efficiëntie						
Logistieke kosten: Zaken doen met mijn leverancier/afnemer helpt mijn bedrijf om de logistieke kosten significant te verminderen		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Winst: Zaken doen met mijn leverancier/afnemer helpt mijn bedrijf om een aanvaardbare winst te behouden		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Responsiviteit						
Doorlooptijd: Zaken doen met mijn leverancier/afnemer helpt de doorlooptijd van mijn bedrijf te verlagen (= tijd tussen een bestelling en de levering)		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Klachten: Zaken doen met mijn leverancier/afnemer zorgt ervoor dat mijn bedrijf minder klachten binnen krijgt van klanten verder in de keten		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Kwaliteit						
Voedselveiligheid: Zaken doen met mijn leverancier/afnemer zorgt ervoor dat mijn bedrijf de voedselveiligheid steeds kan garanderen		1 2 3 4 5 6 7		1 2 3 4 5 6 7		
Aantrekkelijkheid: Zaken doen met mijn leverancier/afnemer helpt mijn bedrijf de aantrekkelijkheid van mijn producten te verhogen		1 2 3 4 5 6 7		1 2 3 4 5 6 7		

Milieuvriendelijkheid: Zaken doen met mijn leverancier/afnemer zorgt ervoor dat mijn bedrijf milieuvriendelijk kan produceren		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Flexibiliteit				
Klanttevredenheid: Zaken doen met mijn leverancier/afnemer helpt mijn bedrijf de eindconsument tevreden te stellen		1 2 3 4 5 6 7	1 2 3 4 5 6 7	
Volumeflexibiliteit: Zaken doen met mijn leverancier/afnemer helpt mijn bedrijf eenvoudig de productievolumes te kunnen aanpassen indien nodig		1 2 3 4 5 6 7	1 2 3 4 5 6 7	