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Department of Social Sciences – MSc Thesis in Management Studies

Get the balance right: The role of business environment, value chain governance and collaboration in value co-creation and capture

A case study research on Greenlea beef value chain

Supervisor:

Jacques Trienekens

Annalisa Achilli

Student N°:

921024-004-030



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Student: Annalisa Achilli

Student number: 921024-004-030

Thesis Supervisor Jacques Trienekens

Thesis Co-supervisor Geoffrey Hagelaar

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Abstract

Purpose – The aim of this study is to discuss the value co-creation and capture processes through the constructs of governance, collaboration and business environment in the context of New Zealander global value chains operating in the agri-food industry. Value chain governance refers to the factors, both managerial and institutional, that affect daily operations of inter-organizational activities and influence the chain capacity to achieve collaborative advantage. Value chain collaboration is regarded as two or more chain actors working jointly to execute the supply chain operations with the common objective of creating higher value than what they would be able to generate individually, for all the members involved. Lastly, the level of business uncertainty is analysed in terms of both environmental and behavioural uncertainty. Namely, the degree to which the future state of a value chain operating environment and of the future behaviour of a chain partner could be accurately forecasted. Previous studies have demonstrated the relevance of chain collaboration to create and capture superior value in uncertain business environments as the one characterizing the food industry. However, a comprehensive analysis of the role of value chain governance in mitigating such uncertainty when trying to achieve collaboration for enhanced value co-creation and capture is still missing.

Design/methodology/approach – The study used literature review and case study data from Greenlea value chain. Semi-structured interviews were conducted with various chain actor representatives of each chain stage (i.e. Farmers, processors, Importer, etc.).

Findings – The results suggest that the value co-creation and capture performance cannot be explained solely through collaboration in terms of information sharing, decision synchronisation and incentive alignment activities. Though, the quality, the type and the timeliness of the shared information, the presence of a synchronisation process of the chain decisions and the adoption of a scheme aligning the risks and the benefits faced by each chain actors, are all crucial elements in determining the achievement of increased level of value co-creation and capture compared to non-collaborative value chain. However, it was concluded that also the adoption by the chain of a balanced combination of trust- and control-based governance mechanisms, together with hybrid governance structures, is necessary as it strongly affects the chain capability to collaborate and thus to improve its value proposition and value capture ability.

Research implications – Value chain practitioners aiming at enhanced value co-creation and capture should be aware that higher level of collaboration can be achieved by harmonising the information sharing, decision synchronisation and incentive alignment chain efforts. Additionally, to decrease the

business uncertainty attention should be given to the governance mechanisms and structures adopted. Hybrid structures and a mixed-use of trust and control enable higher chain flexibility and information visibility.

Originality/value - Most of the earlier studies addressed the analysis of dyadic chain relationships. This research contributes to the literature by analysing a four-tier value chain. Moreover, contextual variables are included (i.e. environmental and behavioural uncertainty). The business environment role has been rarely included in chain research.

Keywords: Global value chain; agri-food industry; Chain collaboration; Governance; Value co-creation; Value capture; Uncertainty; New Zealand

Executive summary

Purpose of the research project and main concepts

The aim of this study was to investigate how does governance affect collaboration, value co-creation and capture of New Zealand agri-food global value chain operating within a given business environment. The definitions adopted for the analysed constructs by the author are presented below, in Table 1.

Table 1: Construct Definition

Construct	Definition	Source
Governance	<i>“authority and power relationships that determine how financial, material, and human resources are allocated and flow within a [value] chain”</i>	Gereffi and Korzeniewicz (1994)
Collaboration	<i>“a cooperative strategy of supply chain partners with common goal of serving customer through integrated solutions for lowering costs and increasing revenue”</i>	Simatupang and Sridharan (2004)
Value co-creation	<i>“the process by which the capabilities of the partners are combined so that the competitive advantage of either the hybrid or one or more of the parties is improved”</i>	Ramon-Jeronimo et al. (2017)
Value capture	<i>“the process of appropriation and retention of customers payments by the chain actors”</i>	
Business environment (level of uncertainty)	<i>Environmental and behavioural uncertainty represent the degree to which the future state of a value chain operating environment and of the future behaviour of a chain partner could be accurately forecasted</i>	Adapted from Pilbeam et al. 2012; Contractor et al. 2011

Furthermore, to the definitions presented in Table 1 some further clarifications should be provided. Indeed, value chain governance has been investigated on two different levels. The first level of analysis has examined the governance construct by considering the analysed value chain as a whole (network governance¹). On a second level of analysis, the governance characterising the bilateral relationships among the value chain actors has been researched.

Firstly, network governance has been defined along two categorisation dimensions. The first categorisation dimension considers the brokerage level of the network. From the one side, networks can be characterised by direct organisation-to-organisation interactions and by the presence of a single organisation responsible for the governance of the whole network (lead organisation governance). From the other side, networks can be governed by all the organisations taking part to the network (shared governance). The second categorisation dimension looks at whether the networks are

¹ *Network governance* represents the set of mechanisms adopted by the different organisations participating to the same value chain to support an enhanced level of collaboration, aiming at achieving higher performances both on the organisation and chain levels (Barratt, 2004; Provan and Kenis, 2008; Alvarez et al., 2010).

externally, or participant governed. Indeed, in some cases, organisations external to the network are responsible of the network governance (Network Administrative Organisation, or NAO). Thus, three main network governance structures can be identified: shared governance, lead organisation governance and governance by a network administrative organisation.

Secondly, governance of bilateral relationships between two chain actors has been considered both as a structure and as coordination mechanisms. Along the continuum between the two opposites represented by market-like and hierarchical relationships, five main bilateral governance structures have been considered. Namely, spot market, verbal agreements, formal contracts, equity-based contracts and vertical integration. Furthermore, as governance structure are made up by a unique combination of specific coordination mechanisms of the diverse transactions aspects, governance as mechanism has also been researched. A distinction has been made between formal and informal governance mechanisms. Formal governance mechanisms are those based on formal contracts setting specific requirements in terms of transaction's price, volume, quality and investments and based on explicit control systems; while informal governance mechanisms are based on implicit social norms and has been measured in terms of trust and commitment levels.

To continue, value chain collaboration has been measured through the constructs of information sharing, decision synchronisation and incentive alignment. Information sharing is the act of capturing and disseminating timely and relevant information for decision makers to plan and control supply chain operations. Decision synchronisation represents the joint decision-making activities both for the long-term (planning) and the short-term (operations) chain strategies selection. Incentive alignment are incentive schemes adopted to encourage value chain actors to align their actions to the common chain goals.

To conclude, also the concept of value has been considered in all its complexity, and the author has tried to research which tangible, knowledge and intangible value has been co-created and capture by Greenlea beef value chain. Tangible value has been considered as the material flows of goods, services and revenues among the chain actors. Knowledge value is represented by exchanges of strategic information along the value chain. Intangible value has been regarded as those chain benefits that cannot be captured in traditional financial measures, such as customer loyalty, sense of community, image enhancement and similar.

Main activities

A single case study was selected as the research design for this research. After an in-depth literature review of the analysed constructs, interviews were conducted with the Greenlea beef chain actors representing each stage composing the value chain. Namely, with Farmers, Processor, Importer and Wholesaler. Thanks to these interviews, it was possible to gain a complete overview of the chain

bringing Greenlea products from New Zealand to the European market (with a focus on The Netherlands). In addition, a comparison with previous studies on the same subject by Van Velzen (2016) was made to increase the validity of the results.

Relevant findings

The literature review and the analysed case studies showed that chain governance influences value co-creation and capture through collaboration in many ways. Firstly, it was found that the adoption of hybrid governance structure enhances the chain information sharing by enabling an increased level of chain flexibility and information visibility. To specify, hybrid governance structures are those in between spot market² and vertical integration³ governance structures. The improved level of information sharing achieved, in turn, positively affects the value co-creation and capture processes. Secondly, the adoption of both formal and informal coordination mechanisms, which corresponds to a balanced combination of trust and control, positively affects the value co-creation and capture processes too. Indeed, the proportional presence of trust as informal governance mechanisms and control (as formal governance mechanisms exercised mainly through the establishment of formal contracts) enhances collaboration mainly by exercising a positive effect on the actors' willingness to share information. Lastly, also the selected network governance affects the information sharing constructs and, in turn, value co-creation and capture. It has been found that information sharing is positively influenced by shared governance and by lead organisation governance, but only when leadership is the effect of a non-coercive source of power. Network governance has also been found to influence the type of governance mechanisms adopted by the value chain through the construct of power asymmetry. From the one side, shared governance involves a symmetrical power distribution among the chain actors and, in turn, has been found to lead to the adoption of informal governance mechanisms. From the other side, lead organisation governed networks are characterised by an asymmetrical power distribution and lead to the adoption of formal governance mechanisms. Therefore, it can be concluded that networks showing elements of both shared governance and leadership will achieve higher levels of value co-creation and capture as they will present a balanced combination of formal and informal governance mechanisms, as it has been observed in the Zespri kiwifruit and in the ENZA apple value chains.

Moreover, it can be concluded that the governance construct does not only influence collaboration but is affected by collaboration too. Indeed, information sharing positively affects the level of trust among the chain actors, which in turn positively affects the level of commitment. Additionally,

² Exchanges among different chain actors are purely governed by price criteria (Raynaud et al. 2005).

³ Present when the management and the ownership of different production and distribution stages are jointly undertaken by different actors (Raynaud et al. 2005).

collaboration has been found to positively affect value co-creation and capture when characterised by a balanced combination of information sharing, incentive alignments and decision synchronisation activities. Moreover, it was found that construct of governance affects and is affected by the environmental and behavioural uncertainty levels characterising the value chain business environment. High levels of environmental uncertainty were found to lead to the adoption of hybrid forms of governance, which enable a higher chain flexibility in dealing with a highly instable environment. The presence of behavioural uncertainty, together with already established good relationships or asset-specific investments, has been found to lead to the adoption of hybrid governance structure too. The level of behavioural uncertainty turned out to be negatively affected by the presence of trust among the chain actors and by the adoption of suitable incentive alignment schemes.

Recommendations for the management

The adoption of a balanced combination of trust and control has been found to positively influence information sharing. Therefore, if Greenlea value chain actors will be able to adapt the design of their governance mechanisms by increasing the adoption of formal contracts, they will achieve an enhanced information flow along the chain. Indeed, the flow of information forward and backward along the chain was found not to be optimal. Greenlea beef network governance should be reviewed too, as the implementation of regular meetings with all the chain representatives would definitely increase the effectiveness of the entire value chain information sharing and open new value co-creation and capture opportunities. Greenlea beef value chain actors should focus on increasing the efficacy of their collaboration activities. The level of decision synchronisation among the actors was found to be quite poor. However, due to the high level of trust and power asymmetry among the various actors, it will be easy for Greenlea value chain to enhance the process of decision synchronisation among the different chain partners. To conclude, the adoption of incentive alignments should also be considered as the optimal level of collaboration has been found to be achieved only through a balanced combination of all its dimensions (Information sharing, decision synchronisation and incentive alignment).

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1. Introduction

1.1. General Case Description and Theoretical Issues Related to The Topic

1.1.1. Global Value Chains

In the last decades, the agri-food industry is dealing with an increased globalisation pressure, tougher market competition and more demanding consumers. Globalization initiated a new age of international competition which is redefining global production and trade, altering the organization of the food industry (Gereffi and Lee, 2012). Looking for low-cost and capable suppliers, food supply chains became progressively more fragmented, with activities dispersed worldwide. Therefore, the concept of global value chain (GVC) appeared in the literature indicating those supply chains whose activities are spread in different countries. This approach entails the study of these chains and focuses on the analysis of their operations and their value co-creation and capture processes (Gereffi and Lee, 2012). The GVC notion became an important research topic due to its relevance in many fields part of research. Within the supply chain management literature, issues related to the timely and efficient distribution of product flows have been investigated. From an industry perspective, the central question is how to gain and maintain competitive production, sales and research capabilities to deliver low-cost, high-quality or high-tech products. Lastly, the GVC analysis focuses on the investigation of how industries should be organized in terms of the size and the ownership of their manufacturers and suppliers, and where they are more convenient to be located. Hence, the ability of countries to advance largely depends on the country's participation in the global economy, namely, to be able to design competitive global supply chains. Nevertheless, further research is still needed to expand the theoretical knowledge available and support GVC actors in defining optimal value chain practices (Kaplinsky and Morris, 2001; Gereffi and Lee, 2012). Previous studies underlined that a successful strategy to achieve competitive GVC has been the shift in commercial focus from increasing technical efficiency in commodity supply chains to increasing added value in differentiated value chains (Saunders et al., 2016). Within this contest, New Zealand agri-food industry has been described as one of the last in the adoption of this approach and still focused on the production of undifferentiated commodities for exports (Roep and Wiskerke, 2012). Furthermore, New Zealand represents an interesting case as its economy strongly relies on the exports of its primary industries, above all, on the agricultural one (StatsNZ, 2017). Representing a key industry, it is important that New Zealand agricultural producers understand and cater to the changing global market requirements to maximise value (Saunders et al., 2015).

1.1.2. Collaborative Global Value Chain

As mentioned above, the increased level of globalisation has dramatically changed the rules of competition, and besides the GVC notion, the concept of collaboration has gained considerable attention in the supply chain literature as well (Matopoulus et al., 2007; Hudnurkar et al., 2014). In this new competitive landscape, companies started to compete on a value chain level instead of adopting an intra-firm focus because of the recognition of supply chain as a crucial field to achieve success (Green et al. 2006; Jain and Benyoucef 2008; Van Velzen, 2016). In this context, the capability to create and sustain collaborative relationships has been recognized as a durable basis for enterprises' success. Indeed, due to its difficult imitability and management, it can enable superior value co-creation and capture (Tuominen, 2004; Fawcett et al., 2008; Chakraborty et al., 2014; Hudnurkar et al., 2014). The same results have been found from Lees and Saunders (2015), who studied the opportunities for New Zealand food and beverage exports to increase their exports returns. They found that having the right supply chain partners at all levels of the chain is critical to success in the market. Moreover, the quality of partners relationships strongly affects the ability to increase exports returns. According to Saunders et al. (2016), consumer value is best created and captured in collaborative value chains, in which companies are willing to engage into long-term strategic relationships, sharing resources, capabilities and knowledge. Specifically, value chain collaboration concerns two or more chain actors working jointly to execute the supply chain operations with the common objective of creating higher value than what they would be able to generate individually, for all the members involved (Chakraborty et al., 2014; Matopoulus et al., 2007). Collaboration has been further specified into the dimensions of information sharing, decisions synchronisation and incentive alignment by Simatupang and Sridharan (2004). Firstly, information sharing relates to the widespread idea that the performance of a supply chain can be highly improved by exchanging information between its members at different decision-making levels (Saunders et al., 2016; Denolf et al, 2015; Ghosh and Fedorowicz, 2008, Lee et al. 1997). Secondly, decision synchronisation is regarded as relevant. Indeed, after the information is collected and disseminated, responsiveness is needed by the chain actors to create superior value for the end consumers. Such an objective is achieved through the joint orchestration of individual planning and operational decisions (Hudnurkar et al., 2014). Finally, it should be considered that actions and decisions taken by one or few chain members considering only individual gains and losses may result in uncompensated costs or benefits for other members. Indeed, decisions taken individually usually do not represent the best solution for the profitability of the entire chain and, thus, they could be taken at the expenses of other chain members. In this case, Simatupang and Sridharan (2002) talk about incentive misalignment. The lack of alignment of risks and benefits among chain actors demotivates the latter to adjust their actions and

priorities for creating value for the whole chain. Therefore, it seems impossible to achieve an effective supply chain without considering incentive alignment issues as well, where this last is defined as the degree to which chain members share costs, risks, and benefits (Simatupang and Sridharan, 2002; Simatupang and Sridharan, 2005). These considerations are particularly true for the agri-food industry that is still criticised for being designed around disaggregated supply chains of commodities, rather than collaborative value chains (Hobbs and Young, 2000). In those chains, consumer needs are not properly communicated throughout the entire chain (Saunders et al., 2016; Balabanis and Diamantopoulos, 2011) and a significant power⁴ asymmetry among companies results in a risk-reward sharing imbalance hindering collaboration (Matopoulos et al., 2007). To effectively achieve collaboration, many barriers have still to be broken down. The creation of a collaborative value chain is not a straightforward process and it involves several risks and difficulties (Montoya-Torres and Ortis-Vargas, 2014; Saunders et al., 2016). Collaborative issues still require further attention from researchers and supply chain practitioners still complain about lacking managerial guidelines for the development and implementation of collaborative practices enabling higher value co-creation (Denolf et al., 2015; Montoya-Torres and Ortis-Vargas, 2014).

1.1.3. Global Value Chain Governance

The need for effective collaboration along a value chain is one reason why attention should be given to value chain governance as well (Saunders et al., 2015). GVCs viewed from a collaboration lens focus on the operations dimension (i.e. information sharing activities, joint planning decisions, etc.). To adopt a more comprehensive way of analysing GVC relationships and their impact on the value co-creation process, a governance perspective should be adopted as well (Jain and Dubey, 2005). If collaboration is about operations, governance rests on a higher level since it refers to the way in which these operations are organized among firms in a value chain (Saunders et al., 2015). Governance concerns the factors, both managerial and institutional, that affect daily operations of inter-organizational activities and influence their capacity to achieve collaborative advantage (Huxham, 2000; Denolf et al., 2015; Saunders et al., 2016). More broadly, governance can be defined as “a multidimensional phenomenon encompassing the initiation, termination and maintenance of ongoing relationships between a set of parties” (Heide, 1994). According to Tuominen (2004), attention should be given to value chain governance mechanisms because they have a crucial impact on the effectiveness of end-to-end product and information flows and they can prevent self-interested behaviours that could destroy part of the value created by the chain (Stump and Heide, 1996, Jain and

⁴ Power can be defined as a relational construct that determines the capability of one chain actor to influence, control, and resist the decisions and activities of another actor in the value chain (Pilbeam et al., 2012)

Dubey, 2005). Indeed, governance can be formal, when enforced through explicit inter-organizational arrangements, as well as informal, when enforced through implicit agreements. Therefore, as collaborative relationships became increasingly important to enhance competitiveness, an improved understanding of interorganizational governance is essential for value chain partners when seeking advantages from interfirm collaboration (Wang and Wei, 2007). Nevertheless, how exactly value chain partners can govern transactions to create superior value from their collaboration has not been widely investigated yet (Wang and Wei, 2007; Van Velzen, 2016; Saunders et al., 2016).

1.1.4. Business Environment

The diversity of institutional and market governance arrangements that exist in global value chains is countless (Roep and Wiskerke, 2012). This variety makes each value chain unique in its own right. Therefore, the context of the specific value chain becomes even more important when researching how global value chain can create superior value. The questions of governance and collaboration under discussion occur within the boundaries of a specific business environment where the formal and informal rules of the game are somehow held constant (Williamson, 2008). Interorganizational relationships do not take place in a vacuum, as firms are embedded into a certain business environment that shapes the way in which they develop (Claro et al., 2003). According to Fischer et al. (2009), market, industry and enterprise-specific characteristics influence the type of contracts chosen to coordinate the chain actors' relationships. For instance, due to the adoption of rigid food safety standards in the European market, many European retailers have moved from spot markets towards more formal contractual choices (Fischer et al., 2009). Consequently, the configuration of a GVC into specific governance structures is expected to depend both on firm's external and internal conditions. Among the external conditions, industry structure, level of uncertainty, changing technology, etc., may play a major role. Among the internal conditions, factors such as the firm size and relationship history could have an influence on governance (Hernandez and Pedersen, 2017). Hence, GVCs operate within a set of established institutional arrangements and cultural values that limit the extent to which economic actors can freely operate within their business context (Roep and Wiskerke, 2012; Pilbeam et al., 2012). According to Matopoulos et al. (2007), several factors related to the business environment may influence the relationships among value chain actors hindering or supporting their collaboration.

1.1.5. Problem Statement and Research Objective

As described in the previous sections, the competition in international agri-food markets is increasingly moving towards products with higher degrees of value, requiring global agri-food value chains to focus on their business environment, governance forms and value chain collaboration.

Because of the limited availability of scientific knowledge, the present explorative research aims at studying the interactions among the constructs of value chain governance, collaboration and business environment, as well as their effect on the chain value co-creation and capture.

1.2. Main concepts and definitions

Global Value Chain (GVC): “The full range of activities that firms and workers perform to bring a product from its conception to end use and beyond, that are carried out on a global scale and that can be undertaken by one or more firms” (Hernández and Pedersen, 2017).

Governance: “A multidimensional phenomenon encompassing the initiation, termination and maintenance of ongoing relationships between a set of parties” (Heide, 1994).

Collaboration: In a value chain context, collaboration is about two or more chain actors working jointly to execute the chain operations with the common objective of creating, for all the involved members, higher level of value than what they would be able to generate individually (Chakraborty et al., 2014; Matopoulus et al., 2007; Simatupang and Sridharan, 2002). The notion of collaboration has been further specified into the dimensions of information sharing, decisions synchronisation and incentive alignment by Simatupang and Sridharan (2004), which have developed a collaboration index based on these three main collaboration elements.

Information sharing: “Act of capturing and disseminating timely and relevant information for decision makers to plan and control supply chain operations” (Simatupang and Sridharan, 2004). Information sharing can deploy different media channel such as face-to-face meetings, telephone, fax, mail and Internet (Simatupang and Sridharan, 2004).

Decision synchronisation: “Joint decision-making in planning and operational contexts. The planning context integrates decisions about long-term planning and measures such facets as selecting target markets, product assortments, customer service level, promotion, and forecasting. The operational context integrates order generation and delivery processes that can be in the forms of shipping schedules and replenishment of the products in the stores” (Simatupang and Sridharan, 2004).

Incentive alignment: “The degree to which chain members share costs, risks, and benefits” (Simatupang and Sridharan, 2004). According to Simatupang and Sridharan (2002), there are three categories of incentive alignment to be adopted to encourage value chain actors to align their actions with the common goals of the chain. The first category is the one of behaviour-based incentive, the second one is the pay-for-performance and lastly the equitable compensation.

Value co-creation: Within a value chain “partners co-create value through collaborative relationships by combining their unique resources, competencies, and capabilities” (Ramon-Jeronimo et al., 2017). The process of value generation relies on maximizing the customer value. The latter has been defined by Zeithaml (1998) as the trade-off between what the customer gives up and the benefits that he receives. This concept of value includes more than pure price measures, recognising that the consumers may take purchasing decisions also based on social, cultural or environmental elements.

Value capture: It refers to the chain actors’ appropriation and retention of payments made by customers. The share of value retained by each actor depends on the market structure, the resource ownership, and the actor’s relative power in the chain (Ramon-Jeronimo et al., 2017).

Business environment: The concept of business environment has been operationalized in many ways within the literature. Matopoulos et al. (2007), distinguish between macro- and micro-factors. The first related to the industry characteristics, the latter related to the individual firm’s features. Hernandez and Pedersen (2017) adopt a similar categorisation when talking about external (i.e. industry structure, changing technology, etc.) and internal (actors’ relationship history etc.) environmental conditions.

1.3. Report Structure

Chapter 1 is made up by the Introduction about the research background, the research problem and the research objectives. Moreover, it includes the research question and the research framework. Later, a description of the main findings of the literature review will be presented in Chapter 2. Chapter 3 presents the conceptual framework resulting from the literature review previously discussed. Chapter 4 describes the methodology adopted to conduct this research and the operationalisation of the main variables. In Chapter 5, the research design selected is introduced. In Chapter 6 the results of the data analysis will be introduced. Chapter 7 discusses the results in comparison with the findings from the literature review. Chapter 8, answers the research questions and elaborates on the managerial implications of the obtained results.

1.4. Research questions

To achieve the aim of this study, the following research question will be addressed:

“How do governance, collaboration and business environment interact in affecting the value co-creation and capture ability of New Zealand agri-food global value chain?”

To answer the main research question, the following specific sub-questions have been formulated:

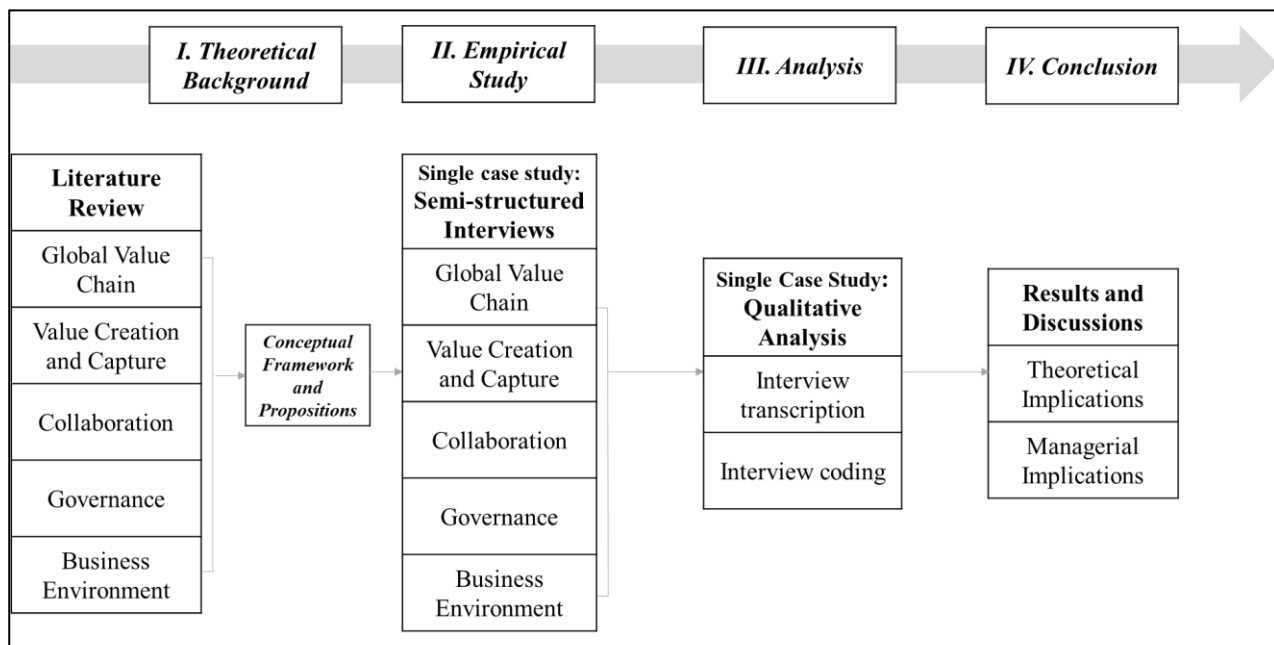
- Sub-question 1: *“What is the value co-creation and value capture potential of collaborative New Zealand agri-food global value chains?”*

- Sub-question 2: “What is the business environment role in affecting the value co-creation and capture potential New Zealand agri-food global value chains?”
- Sub-question 3: “What are the value co-creation and capture ability resulting from the information sharing, decision synchronisation and incentive alignment activities currently performed by New Zealand agri-food global value chains?”
- Sub-question 4: “What are the governance forms currently adopted by New Zealand agri-food global value chains and how do they affect the chain value co-creation and capture?”

1.5. Research Framework

Figure 1 shows the research framework of this study, which is a schematic representation of the activities that will be taken to answer the research questions.

Figure 1 – Research Design



Four main research phases can be identified:

Phase I: Theoretical background

The literature review will provide the general background knowledge about the concepts of Global Value Chain, including the dimensions of business environment, collaboration, governance, and value co-creation and capture processes. The information gathered in the literature review will enable the identification of the main constructs to be analysed. Propositions about the relationships linking these constructs will be developed and depicted in a conceptual framework.

Phase II: Empirical Study

To test the conceptual framework, the latter has been applied to a selected case study in the second phase of the research. A single case study has been adopted as this methodology has been found to

be suitable for conducting explorative research aimed at building new theories (Yin, 2009; Eisenhardt and Graebner, 2007). The case under study is represented by Greenlea beef value chain. During the in-depth case study, interviews were conducted with different actors from each value chain stage (i.e. Farmers, processor, distributor, etc.).

Phase III: *Data Analysis*

The information collected during the third research phase (Empirical study) were transcribed and coded according to the constructs presented in the conceptual framework.

Phase IV: *Conclusions*

The results emerging from the analysis were described and discussed. To conclude, the theoretical implications and the managerial implications of the study were elaborated in the Discussion.

2. Literature review

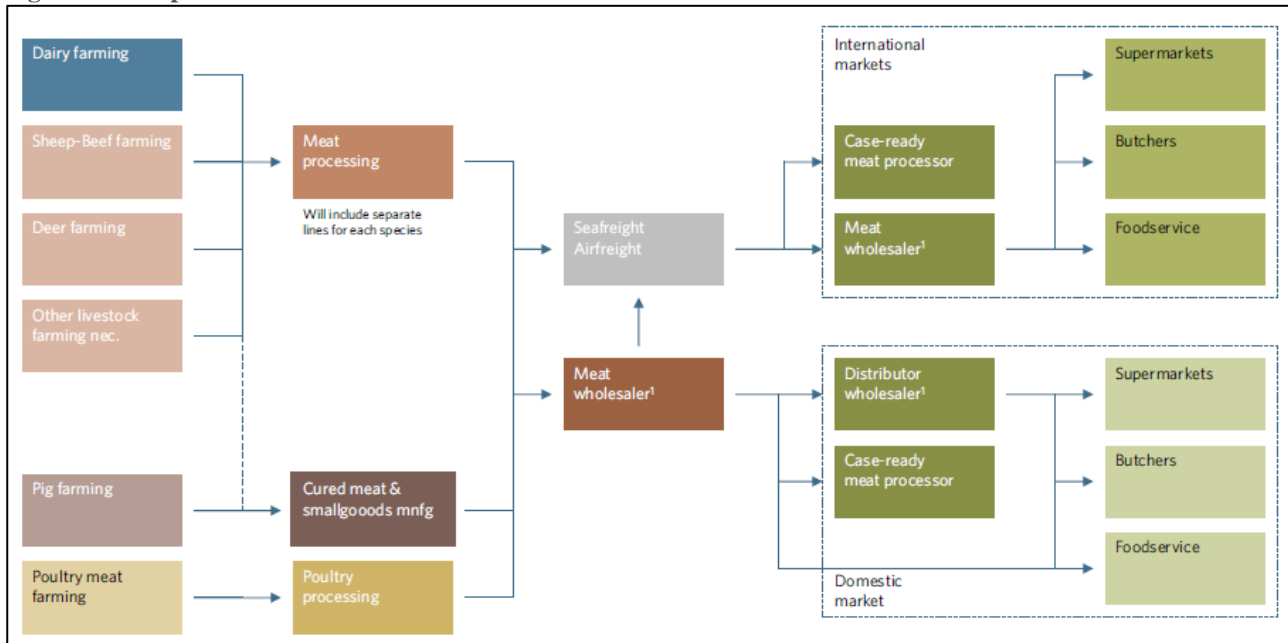
Hereafter, a summary of the main findings from the literature review phase is presented for all the global value chain dimensions taken under analysis. Firstly, the global value chain framework will be presented. Secondly, a review of the value co-creation and capture concepts is discussed. Thirdly, the available literature about collaborative value chain is introduced. Fourthly, the available literature on global value chain governance is reviewed. To conclude, a review of the available research about the business environment dimension is introduced.

2.1. The Global Value Chains (GVC) Framework

Within this section, the Global Value Chain Framework and its relevance within this study will be presented according to the literature review.

In the last decades, the agri-food industry is dealing with an increased globalisation pressure, tougher market competition and more demanding consumers. Globalization has initiated a new age of international competition which is redefining global production and trade, altering the organization of the food industry (Gereffi and Lee, 2012). Looking for low-cost and capable suppliers, food value chains became progressively more fragmented, with activities dispersed worldwide. Therefore, the concept of global value chain (GVC) appeared in the literature indicating those chains whose activities are spread in different countries. For the agri-food industry, each activity needed to bring a product from its conception to the final consumer is performed by a different group of actors in the chain as shown in Figure 2 with an example of a typical New Zealand meat value chain (Gereffi and Lee, 2009).

Figure 2 – Simplified model of New Zealand meat value chain.



Source: Adjusted from Ministry of Business, Innovation & Employment (2017)

The GVC framework focuses on the analysis of the value chain operations and their relative sequence of value co-creation processes (Gereffi and Lee, 2012; Gereffi and Fernandez-Stark, 2016). It permits to understand how global value chains are organized by examining their structure and the dynamics of the various actors involved in them. Moreover, it investigates the value chains specific technologies, standards, products characteristics, processes and markets. Hence, it provides a holistic approach of analysis (Gereffi and Fernandez-Stark, 2016). Therefore, the GVC notion became an important research topic due to its relevance on many levels of research. For instance, within the supply chain management literature, issues related to the timely and efficient distribution of product flows have been investigated. From an industry perspective, the GVC analysis focuses on the investigation of how an industry should be organized in terms of the size and the ownership of their manufacturers and suppliers, and where they are more convenient to be located. Even if GVCs have already been studied from several perspectives, further research is still needed to expand the theoretical knowledge available and support GVC actors in defining optimal value chain practices (Kaplinsky and Morris, 2001; Gereffi and Lee, 2012).

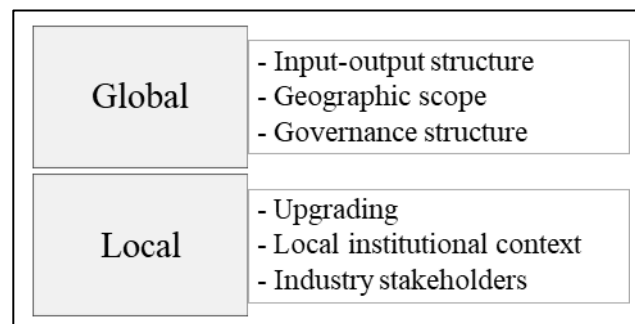
To be able to adopt the GVC framework, it is crucial to first define what a global value chain really is. The GVC notion evolved from the global commodity chains (GCC) framework previously developed by Gereffi (1994, 1999), who defined a GCC as all the activities involved in the design, production, and marketing of a product. The author identified three different dimensions of GCC:

- their *input-output structure*, namely, the set of products and services linked together in a sequence of value-adding activities;

- their *territoriality*, or level of activities dispersion; and
- the *governance structure*, or the authority and power relationships shaping the financial, material and knowledge flows along the chain.

However, according to Sturgeon (2008), the GCC concept was too static and unable to capture the full range of possible inter-organizational networks and their different dimensions. Therefore, a shift to the GVC concept was proposed in the literature. The value chain concept is quite different from its GCC progenitor. Indeed, it stresses that the interconnections among the chain actors have as final objective the creation of value for the end-consumer which, if captured, may become a source of competitive advantage (Hernandez and Pedersen, 2017). Furthermore, in the GVC framework three additional dimensions of analysis are added, which are categorised in global (top-down approach) and local elements (bottom-up approach) as in Figure 3:

Figure 3 – GVC dimensions



Source: Adapted from Sturgeon (2008)

The first three dimensions are related to global elements, namely, they are determined by the dynamics of the industry at a global level. The last three dimensions explain how individual countries participate in the GVC context. These latter represent the local elements previously absent from the GCC framework, which are:

- *upgrading*, which examines the organizational learning process to improve the position of firms in international trade networks (Gereffi and Tam, 1998).
- *institutional context* that represents the local economic and social environment in which the value chain is embedded (Gereffi and Fernandez-Stark, 2016); and
- *industry stakeholders*, which describes how the different local actors of the value chain interact to achieve industry upgrading (Sturgeon, 2008).

Due to the current trends of increasing globalisation in the agri-food industry (Gereffi and Lee, 2012), this research will focus on the agri-food GVCs. Attention will be mainly given to the dimensions of governance and institutional context (referred to as *business environment* in this study) to investigate their impact on the collaboration activities within GVC. The available literature about these GVC dimensions is still very scarce. However, previous studies confirmed that both governance and the

institutional context can impact the potential value co-creation and capture of GVCs (Van Velzen, 2016; Saunders, 2016). As the main objective of this research is to better understand how New Zealand GVC practitioners can increase the value created and captured in their network, an in-depth literature review on these GVC dimensions is presented hereafter.

2.2. Value co-creation and value capture

Within this section, the results from the literature review about the concept of value capture and value co-creation are discussed. Firstly, the concept of value will be introduced. Secondly, the concept value co-creation within a value chain will be presented. To conclude, the value capture construct is also debated.

The creation of superior value for the end-consumer is the ultimate goal of every GVC actor because, if captured, this value can ensure a sustainable basis of competitive advantage (Hernandez and Pedersen, 2017). Therefore, value co-creation and value capture have been central notions in the supply chain management literature. According to the Value Net Perspective (VNP), today enterprises are pushed to create dynamic value-creating networks (or value net). A **value network** is defined as “a dynamic, flexible network, which is called a value net because it creates value for all of its participants and because these participants operate within a collaborative network”. Furthermore, value networks aim to be customer-focus, as they try to seize customers’ actual needs and satisfy them responsively (Ahtonen and Virolainen, 2009; Ramon-Jeronimo et al., 2017). Therefore, the VNP seems to be a suitable approach to analyse GVCs, as it adopts the same focus on value co-creation, collaboration and inter-firm relationships management. Moreover, Ahtonen and Virolainen (2009) and Kahkonen (2012) claim a lack of VNP studies focusing on the agri-food industry. The latter is regarded as a particularly relevant field of future VNP research due to the importance gained by networking among agri-food actors. For these reasons, the Value Net Perspective approach will be adopted during the conduction of this research project.

To analyse the value co-creation and capture processes, it is crucial to firstly define the concept of value. The previous supply chain management literature has recognized the final consumer as the ultimate judge of the value created by supply chains (Macharia et al., 2013; Saunders et al., 2016). According to Zeithaml (1998), consumer value can be defined as the trade-off between what the consumer gives up and the benefits that he receives. This concept of value includes more than pure price measures, recognising that the consumers may take purchasing decisions also based on social, cultural or environmental elements. Emphasis has been given to consumer value because of the underlying assumption that enterprises will achieve competitive advantage only when able to provide “superior” value to their consumer if compared to their competitors. However, from a GVC

perspective it is not sufficient to talk only about consumer value (Walter et al., 2001); rather this concept should be expanded to take into consideration the value created for each actor participating to the chain. The reasons behind are, firstly, that each actor in the chain plays a relevant role in the value co-creation process for the end-consumer. Secondly, that each GVC practitioner should be able to capture a share of the value created to be willing to continue to participate to the chain. Lastly, according to Barber (2008) the ultimate goal of every chain is to generate the highest level of value, not just for some of its actors, but for the whole value net including the final consumer. Therefore, the broader concept of *value for partners* will be adopted within this research, referring to the value created by and for the whole value chain partners.

When analysing value for partners, value perceptions are likely to be different among the diverse partners and, within a value network, multiple forms of value are created for the various actors. Therefore, it is clear how value represents a multi-dimensional and complex concept. For instance, value can be defined both monetarily and not (Reypens et al., 2016; Contractor et al., 2011; Walter et al., 2001). Walter et al.'s (2001) distinguished between direct and indirect value created from chain actors' relations. The former refers to the profit functions of a dyadic relationship (i.e. buyer-seller; input provider-buyer, etc.); hence, it is of tangible nature. The latter refers to the intangible aspects of value-creation, such as access to new customers, access to relevant knowledge and information, etc. According to Allee (2000), value is exchanged every time that a transaction takes place among actors in a value network. Yet, only a portion of the exchanged value can be captured into monetary and tangible measures. The author defines three main value currencies:

- *Goods, services and revenues*, or “all transactions involving contracts and invoices, return receipt of orders, requests for proposals, confirmations, or payment. Knowledge products or services that generate revenue or are expected as part of service (such as reports or package inserts) are part of the flow of goods, services, and revenue” (Allee, 2000);
- Knowledge value, namely, “exchanges of strategic information, planning knowledge, process knowledge, technical know-how, collaborative design, policy development, etc., which flow around and support the core product and service value chain” (Allee, 2000); and
- Intangible value, or “Exchanges of value and benefits that go beyond the actual service and that are not accounted for in traditional financial measures, such as a sense of community, customer loyalty, image enhancement, or co-branding opportunities” (Allee, 2000).

Within this research project, all these three forms of value will be considered to achieve a holistic understanding of the value co-creation and capture processes.

Little consensus on what exactly **value co-creation** is and on how it could be achieved is still present (Bröring and Cloutier, 2008; Ramon-Jeronimo et al., 2017). Nevertheless, according to the value net perspective, the generation of a higher level of value cannot result from the activities of a single firm alone, neither from a simple sequential process in which value is added at each phase of a value chain. By contrast, value-creating activities are the result of a co-creating process (Kahkonen, 2012). Ramon-Jeronimo et al. (2017) define inter-organizational value generation as the “process by which the capabilities of the partners are combined so that the competitive advantage of either the hybrid or one or more of the parties is improved”. Because of the pressures imposed by an extremely dynamic business environment, firms cannot concentrate anymore nor on their own organizations per se, neither on simple dyadic relationships when creating value for consumers (Ahtonen and Virolainen, 2009; Kahkonen, 2012). Indeed, value chain members become involved in close cooperation activities during the value chain management processes aimed at the value co-creation. Authors such as Tuominen (2004) and Chakraborty et al. (2014) have recognized a strong positive association between value chain collaboration and value co-creation. In this context, also the value net perspective has recognized that value is co-created in networks, not by single companies, through the establishment of collaborative relations among firms with complementary capabilities and resources (Anthonen and Virolainen, 2009; Kahkonen, 2012). Therefore, collaboration has been widely recognized as extremely relevant. However, there is still a lack of clarity about how to implement it to achieve superior value co-creation performance. The service dominant-logic theory has also recognized that value can never be created, but always co-created when chain actors combine their knowledge and specialized competencies in collaborative relationships (Chakraborty et al., 2014). Therefore, also the latter theory supports the idea according to which value chain collaboration has a significant positive impact on value co-creation. To conclude, both researchers and value chain practitioners claim the importance to better investigate which are the collaborative value-creating activities that should be adopted in GVCs to achieve a superior competitive advantage (Bailey and Francis, 2008).

Once value has been co-created, attention should be given to the process of **value capture** that has been defined as the ability of every firm participating to the network to retain a portion of the value created, and therefore to increase its profitability and competitive position (Ramon-Jeronimo et al., 2017). When chain actors have an unclear vision about the appropriation process of their portion of value, they may be unwilling to collaborate to the value-creating network (Reypens et al., 2016). According to Tuominen (2004), value capture (or appropriation) focuses on the capability of the value chain actors of appropriating value in the market (i.e. extracting profit). Value co-creation is not

sufficient per se to achieve a sustainable competitive advantage if the chain actors are not able at the same time to capture the value they have created (Tuominen, 2004).

Value capture can be defined as the process of appropriation and retention of customers payments by the chain actors. This process could be influenced by several business environment characteristics, such as the market structure, resource ownership, and the relative power of actors in the value chain (Ramon-Jeronimo et al., 2017). According to Ramon-Jeronimo et al. (2017), value is captured when the greatest share of profit is retained by the firm rather than by its competitors, and those payments generating the firm's profit are taken by resisting claims coming from upstream or downstream chain members thus, value has been primarily associated with financial variables such as sales growth, profitability and market share. Referring to this mechanism of value capture, within this report the term tangible value capture will be adopted. However, as in the case of value co-creation, value capture will be analysed both in terms of tangible, knowledge and intangible value captured not only individually by each chain actor, but also by the value chain as a whole. More detailed examples about the differences among the three processes will be provided in the Methodology chapter (§3).

2.3. Collaboration in Global Value Chains

Within this chapter, the definition of the concept of collaboration is provided together with the collaboration benefits and barriers identified in the available literature.

In recent years, collaboration has received considerable attention since it has been recognized as one of the key antecedents of value co-creation ability both at the individual and collective levels (Chakraborty et al., 20014; Kahkonen, 2012, Tuominen, 2004; Matopoulos et al., 2007; Simatupang and Sidharan, 2008). Value chains have been recognized as a key field for enterprises' success (Matopoulos et al., 2007), where firms have started to abandon their intra-organisation focus to look outside of their boundaries for collaboration opportunities (Hudnurkar et al., 2014). Due to the recent shift from increased technical efficiency in commodity chains to a value-added mindset, collaboration resulted to be a key issue in GVCs (Roep and Wiskerke, 2012). This is particularly true for the agri-food industry, which is facing greater pressures from increasingly demanding consumers, agri-food products trade liberalisation and disruptive innovation in science and technology (Dalziel et al., 2016). Agri-food actors have been criticised to be among the slowest to adopt a value mind-set and collaborative approaches to face this new competitive scenario (Hobbs and Young, 2000; Matopoulos et al., 2007). According to Saunders et al. (2016), what is true for the agri-food industry, in general, is also true for the specific case of New Zealand. This country is often regarded as producing low-cost standardised commodities for export rather than value-added products (Dalziel et al., 2016). As the focus of this research is the New Zealand agri-food industry, it results necessary to better

investigate the value co-creation opportunities offered by the adoption of GVCs collaboration from New Zealand agri-food chain actors. Below, the results from the literature review about the latter concept are presented.

2.3.1 The concept of collaboration

Value chain collaboration has been defined in different ways within the literature. In their review, Hudnurkar et al. (2014) present a summary of the available definitions (Table 2).

Table 2 – Collaboration definitions

Source	Definition provided
Simatupang <i>et al.</i> 2004	<i>“Collaboration is a cooperative strategy of supply chain partners with a common goal of serving customer through integrated solutions for lowering cost and increasing revenue.”</i>
Samaddar and Kadiyala, 2006	<i>“Collaborative relationship as one in which an organization initiates and implements a knowledge creation endeavour, and a collaborating organization shares the expense and benefits of newly created knowledge, including its joint ownership through patents and licenses.”</i>
Kampstra <i>et al.</i> 2006	<i>“Financially independent entities try to get the dependent parts of the chain to ‘play’ together, i.e. ensuring that the entities in a chain interact successfully to provide the necessary coordinated outputs.”</i>
Fawcett <i>et al.</i> 2008	<i>“The ability to work across organizational boundaries to build and manage unique value-added processes to better meet customer needs.”</i>
Simatupang and Sridharan (2008)	<i>“Collaboration describes the cooperation among independent, but related firms to share resources and capabilities to meet their customers’ most extraordinary or dynamically changing needs.”</i>
Cao and Zhang, 2011	<i>“A partnership process where two or more autonomous firms work closely to plan and execute supply chain operations toward common goals and mutual benefits.”</i>

Source: Adapted from Hudnurkar et al. (2014)

Among the various definitions, the one elaborated by Simatupang and Sridharan (2004) has been selected as the most suitable for this research project as it stresses on the correlation between collaboration and value-added processes. The authors define collaboration as *“a cooperative strategy of supply chain partners with common goal of serving customer through integrated solutions for lowering costs and increasing revenue”*. According to the authors, collaboration consists of five elements, namely, collaborative performance system (CPS), information sharing, decision

synchronisation, incentive alignment, and innovative value chain processes. They also suggest that chain members must consider the interactions among these five elements to take effective decisions and actions (Simatupang and Sridharan, R. 2008). Even if previous researchers have adopted diverse collaboration definitions, collaboration has often been described as an evolving process rather than a static one (Simatupang and Sridharan, R. 2008). Therefore, to create effective collaboration, all the five elements described must be balanced and well-coordinated, as changing one of them usually requires changing also the other ones.

Moreover, a collaboration index has been developed by Simatupang and Sridharan (2004) allowing to assess the collaboration degree among the actors of GVCs. According to the authors, the collaborative level of a value chain can be measured by assessing the level of:

- *Information sharing (IS)* or the process of timely collection and dissemination of relevant and reliable information for the decision-making process of the chain actors. Information sharing enables a better management of the planning and control of value chain operations (Simatupang and Sridharan, 2004);
- *Decision synchronisation (DS)* or the joint decision-making activities both for the long-term (planning) and the short-term (operations) strategies selection (Simatupang and Sridharan, 2004); and
- *Incentive alignment (IA)* or the extent to which chain partners share costs, risks, and benefits among them (Simatupang and Sridharan, 2004).

Within this research, attention will be mainly focused just on these three key collaboration dimensions, which are further discussed below. Indeed, several authors have identified the basis of collaboration in the benefits and risks sharing process, the sharing of information and joint decision-making (Baratt, 2004; Baratt and Oliveira, 2001; Stank et al., 1999).

Information sharing

The sharing of data related to performance metrics and to the different chain processes enables the network members to obtain a better picture of the whole value chain status and, eventually, to increase the effectiveness of their decision-making process. However, not all the information shared among the actors brings value. Additionally, it is not the amount of data, but their quality that affects relational variables such as trust and relationship continuity expectations (Ramon-Jeronimo et al., 2017). Ramon-Jeronimo et al. (2017), adopted four main criteria to assess the information sharing quality, namely, the information scope (narrow vs broad), timeliness (slow vs fast), aggregation (summarised vs detailed) and integration (one-unit vs multiple-unit). Additional criteria for the evaluation of the quality of information sharing, such as relevancy, accuracy, and reliability, have

been adopted by Simatupang and Sidharan (2008). Moreover, several categories of information and information sharing mechanisms exist (Denolf et al., 2015). Concerning the category of information shared, research has largely investigated information related to the planning of logistics processes (Kembro and Näslund, 2014), which relates to the scheduling of orders and the demand forecasting. Two further categories are those of product and process information that turn out to be very relevant in the agri-food industry (Huang et al., 2003). The former defines the features of the manufactured products, the latter outlines the characteristics of the value-adding activities during the different production phases performed along the value chain. All these three categories of information shared among chain partners are considered in this study.

Furthermore, a value chain may adopt different mechanisms to share information (Denolf et al., 2015). Automated systems collect, store, process, and transmit information throughout the value chain in real time (i.e. value chain information systems and EDI). However, numerous value chain information is still exchanged through semi-automated systems (i.e. fax, phone calls and e-mails) besides paper-based systems (i.e. reports, flyers, etc.) and face-to-face interactions (i.e. personal meetings) (Denolf et al., 2015). In this study, all the available information sharing mechanisms are taken into analysis.

Decision synchronisation

By coordinating their long- and short-term decisions, chain actors can boost the overall chain profits and lower the collective costs. Indeed, independent decision-making process is often related to sub-optimal performances, while joint decision-making provides synergistic benefits to the chain members (Simatupang and Sridharan, 2008). During the decision synchronisation process, several questions should be addressed by the collaborating partners about how decisions must be taken in the chain, what is the information needed, who has the best access to it, and who is best equipped to make a responsive use of them. Jensen and Meckling (1992) explained that limited capacities of individual decision-making are due to the fact that information is costly to capture, store, and process. Some knowledge is easy to transfer. In this case, the knowledge is transferred through information sharing to the person with the right to make the decision. Other knowledge is difficult and costly to transfer. Consequently, according to Jensen and Meckling (1992), a key issue in decision synchronisation is to link information and decision rights. Decision synchronisation is thus the process by which the decision right over actions is assigned to specific chain members within the value chain, who are then held accountable for the results. Fama and Jensen (1983) distinguished several stages within the decision-making process. Initiation is the request to make certain decisions. Ratification is approval of the request. Implementation is the execution of the decision. Monitoring involves assessing the

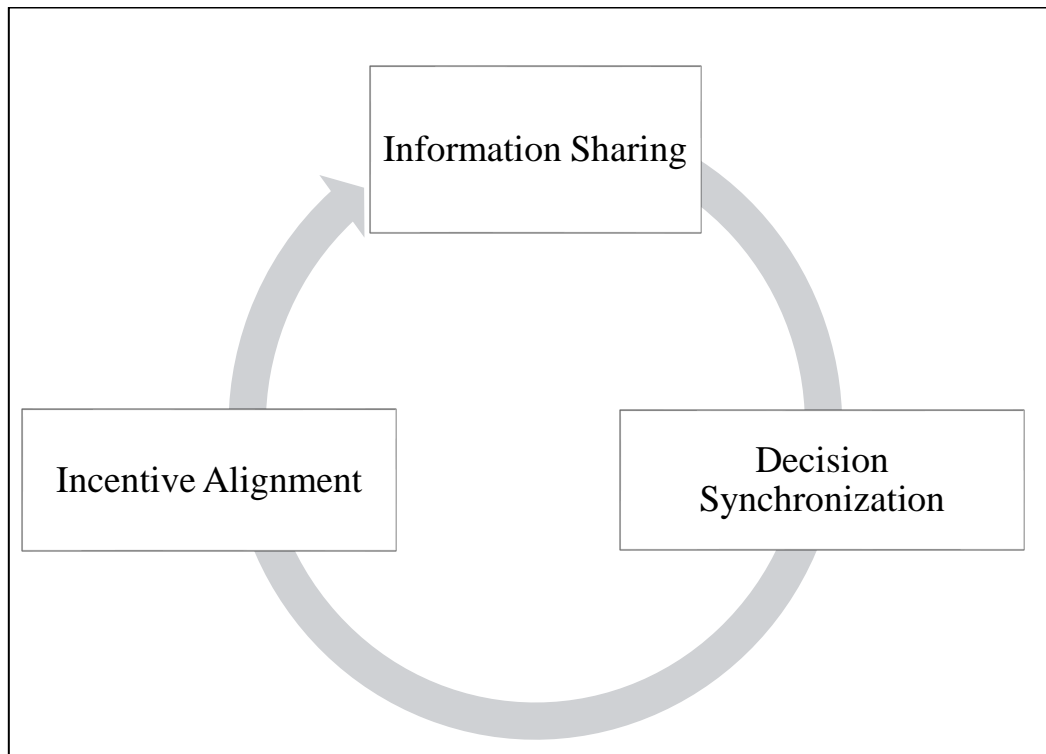
performance of the implementation system at periodic intervals to evaluate the chain member who had decision rights.

Incentive alignment

Incentive alignment refers to the process of sharing costs, risks, and benefits amongst the participating members (Simatupang and Sridharan, 2002) to motivate participating members to create value for all the members. Three main categories of incentive alignment can be distinguished, namely, behaviour-based incentives (or pay-per-effort), pay-for-performance incentives and equitable compensation. The first category assumes that rewarding effort would motivate individual chain actor to face a given effort which relates to a certain level of performance. This type of incentives assumes that by rewarding the chain actors for their efforts, rather than for the achievement of the final goal, would boost their performance and further motivate them. The second scheme links payment and performance by assuming that rewarding performance will motivate the individual chain member to achieve the desired level of performance. Therefore, performance metrics are designed to be used to evaluate the chain members against them. The last category is represented by equitable incentive, namely, the mechanisms of sharing equitably load and benefits resulting from exerting a certain amount of collaborative effort. Usually, investments are made by the chain actors that results in gains. Once the returns on investments have been recorded, the gains are fairly shared among the chain members based on jointly agreed formula (Simatupang and Sridharan, 2002; Simatupang and Sridharan, 2005).

To create effective incentive alignment schemes, the chain members should decide on what level of incentive is to be paid, how the incentive is to be linked to overall performance, and how the incentive is to be paid (i.e. its composition). As the collaborative objective is to create profits and lower total costs, the chain members should select a performance measure that is consistent with that objective and use it to determine incentive. Effectively designed and implemented incentive alignment create value for collaboration in many ways such as improving the motivation and productivity of employees, mobilising valuable specific knowledge by allowing effective decision right allocation, and helping overcome opposition to change.

Figure 4 – Collaboration process



Source: Adapted from Simatupang and Sridharan (2004)

2.3.2 Benefits of collaboration

Previous studies have emphasised various benefits arising from the adoption of collaborative behaviour and practices in value chain management. Among the others, several researchers have accredited to collaboration a crucial impact on costs reduction, operational flexibility, efficient use of limited resources, increased product quality and service level (Simatupang and Sridharan, 2005; Montoya-Torres and Ortiz-Vargas, 2014; Hudnurkar et al., 2014). Matopoulos et al. (2017) distinguished between “macro-level” benefits and “activity-based” benefits. The former is general costs reduction and revenue growth; the latter is directly linked to a specific value chain activity and are presented in Table 3.

Table 3 – Collaboration activity-based benefits

Value chain activities	Collaboration benefits
Procurement	<ul style="list-style-type: none"> - Reduce time searching for suppliers and tendering - Easier management of a reduced supply base - More stable prices
Inventory Management	<ul style="list-style-type: none"> - Lower stock holding - Increased asset utilization
Product Design and Development	<ul style="list-style-type: none"> - Faster product development Knowledge sharing and increased innovation capacity - Better quality deriving from involvement of supplier in design
Manufacturing	<ul style="list-style-type: none"> - Increased product quality - Minimize supply distribution
Order processing	<ul style="list-style-type: none"> - Increased responsiveness
Distribution	<ul style="list-style-type: none"> - Faster delivery - Flexible delivery
Sales	<ul style="list-style-type: none"> - Rapid access to markets - Increased market share - Improved promotional events
Demand Management	<ul style="list-style-type: none"> - More accurate forecasts - Joint resolution of forecast exception
Customer service	<ul style="list-style-type: none"> - Improved product availability - Improvements in lead time

Source: Adapted from Matopoulos et al. (2007)

2.3.3 Barriers to collaboration

Even if many benefits arising from collaboration have been recognised, many researchers have studied also the risks and the difficulties involved in the adoption of collaborative practices. One of the first risks recognized in the literature is the risk of failure, which involves the loss of financial investments, managerial time and delay or abandonment of business projects if collaboration is unsuccessful (Matopoulos et al., 2007). Indeed, many collaborative relationships fell short of meeting the expectations of their participants. In previous studies, it has been estimated that the failure rate for different types of business alliances (i.e. joint ventures, M&As, etc.) is around 50 percent (Barringer and Harrison, 2000). Moreover, collaborators may become at some point either the partner of another competitor, or a competitor themselves. Therefore, the increased level of dependence of one firm on another, which can be developed through a closer collaboration, represents an additional risk. This is particularly true for smaller organisations that are collaborating with bigger ones, which

detain a higher level of power. Furthermore, an inherent risk associated with collaboration is the risk of increased operational complexity. For example, many collaborators face difficulties in integrating their IT systems. This can cause the termination of the collaboration (Matopoulos et al., 2007; Montoya-Torres and Ortiz-Vargas, 2014). The existence of all those difficulties underlines the urgent need for further research to better understand what the specific requirements to achieve effective GVC collaboration are (Fawcett et al., 2008). The adoption of a governance perspective can add insights to this issue, as governance is about the way enterprises organize their relationships and therefore it impacts their performance in terms of collaborative activities (Jain and Dubey, 2005). Therefore, in the next section, the concept of governance will be further discussed.

2.4. The relevance of Governance in Global Value Chains

Below, the author introduces the concept of governance. Firstly, a definition of governance is provided. Secondly, the governance structures that could be adopted by value chain actors are presented. Lastly, the governance mechanisms concept is debated.

Governance represents a key concept in global value chains studies (Sturgeon et al., 2008) and to adopt a more comprehensive way of analysing GVC collaboration and their impact on the value co-creation process, a governance perspective should be adopted as well (Jain and Dubey, 2005). According to Heide (1994), governance represents “*a multidimensional phenomenon encompassing the initiation, termination and maintenance of ongoing relationships between a set of parties*”. The definition provided by Gereffi and Korzeniewicz (1994) describes governance as the “*authority and power relationships that determine how financial, material, and human resources are allocated and flow within a [value] chain*”. When talking about value chain governance we refer to the management and organization of the relationships among chain members involved into tangible and intangible exchanges processes (Denolf et al, 2015; Jain and Dubey, 2005). It results to be clear that, if collaboration is about the operations dimension, governance rests on a different level of analysis as it refers to the way in which these (collaborative) operations are organized and accomplished. Governance concerns the factors, both managerial and institutional, that affect daily operations of inter-organizational initiatives and influence their capacity to achieve collaborative advantage (Huxham, 2000; Denolf et al., 2015; Saunders et al., 2016). Therefore, it results to be essential to achieve a clear understanding of how inter-firm governance can represent a value-creating activity in collaborative contexts (Wang and Wei, 2007), on how chain partners can govern their transactions to create superior value from their collaboration has not been widely investigated yet (Wang and Wei, 2007; Van Velzen, 2016; Saunders, 2016). Therefore, the following report section further discusses

the concept of governance as extremely relevant when talking about the GVC collaboration (Wang and Wei, 2007).

Governance has been analysed by adopting different perspectives. From the one side, many researchers (Raynaud et al, 2005; Williamson, 1991; Wever, 2012) have taken as their unit of analysis dyadic relationships (i.e. buyer-supplier). From the other side, authors such as Provan and Kenis (2008) and Alvarez et al. (2010) have considered the whole network as the unit of analysis. This research considers together these two perspectives, as they both have been found to impact the nature, the dynamics and the outcomes of inter-organisational relationships in value chain (Alvarez et al., 2010). Furthermore, governance forms will be analysed both as governance structures and mechanisms. Governance is the structure that ensures that decisions are made that lead to long-term, sustainable value for an entity such as a corporation or, in this case, a formal collaboration between multiple organizations (Monks and Minow, 2004). Governance mechanisms must be designed to accommodate potential conflicting goals of independent members. Trust, bargaining power (or power), and contracts are three important mechanisms of governance that shape interorganizational relationships by reducing the associated risk and uncertainty levels (Alvarez et al., 2010; Ghosh and Fedorowicz, 2008).

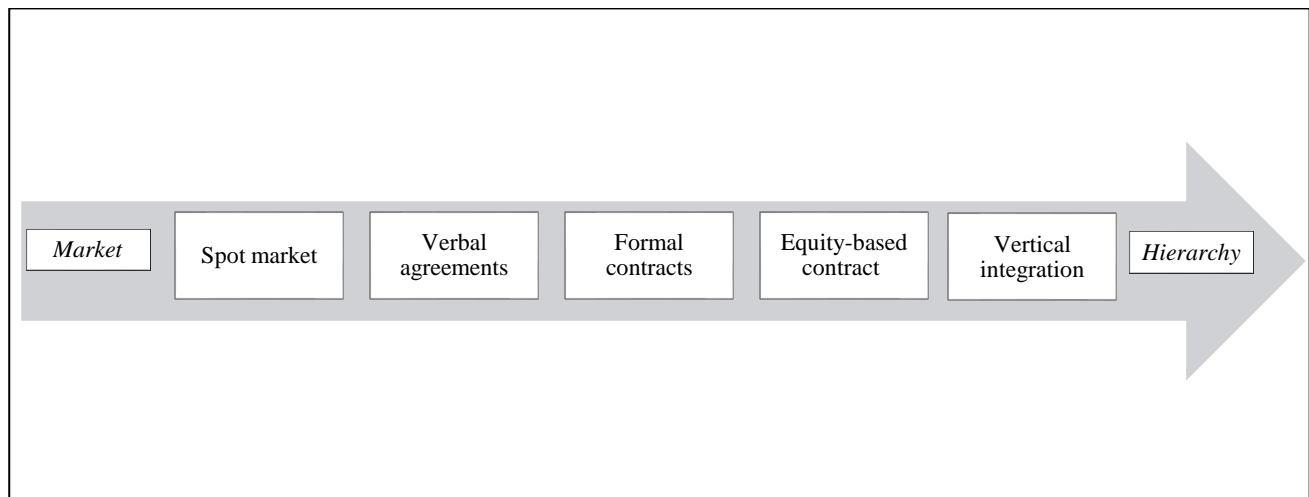
2.4.1 Governance as structure

Bilateral governance

Governance has been analysed by adopting as unit of analysis the dyadic relationships between two chain actors (i.e. buyer-supplier) (Raynaud et al, 2005; Williamson, 1991; Wever et al., 2012). A first contribution to the literature on bilateral governance has been provided by Coase (1937) who distinguished between two opposite governance structures, namely, markets and hierarchies. In the GCC framework, governance was defined generally as either buyer-driven or producer-driven (Gereffi, 1994). From the one side, buyer-driven chains indicate the prevailing role of large retailers and highly successfully branded merchandisers in shaping the operation of the chain, by imposing specific standards and protocols on suppliers. From the other side, producer-driven chains are those with a higher level of vertical integration along the different stages of the chain and are shaped by suppliers with technological or scale advantages (Gereffi and Fernandez-Starks, 2016). However, with the shift towards the GVC framework, the simple distinction between buyer-driven and producer-driven chains was regarded as too simplistic and static. A relevant contribution to the governance literature has been provided by the scholars of the Transaction Cost Economics (TCE) theory. According to this theory, governance structures constitute a continuum going from spot-market to hierarchical relations and among these two alternative hybrids structures are available

(Williamson, 1991). Furthermore, the TCE theory is based on the efficient alignment principle, which affirms that governance structure choices are made aiming at the minimisation of transaction costs. Moreover, the selection of a specific governance structure depends on the transaction attributes, namely, asset specificity, uncertainty and measurement difficulties. Asset specificity refers to the extent to which the investments an actor makes to support or facilitate a transaction, ties him to the other party in the transaction (Grunert et al., 2011; Wever et al., 2010). The uncertainty level represents the degree to which unanticipated changes, in the environment in which the transaction is embedded, can be forecasted (Wever, 2012). Chain actors are limited by bounded rationality; therefore, they are not able to specify all the potential changes in their operational environment in advance (Wever, 2012). Performance measurement difficulties concern the extent to which an actor can measure the benefits and costs brought by the other actor participating to the transaction (Grunert et al., 2011; Wever et al., 2012). Specifically, as the levels of asset specificity and measurement difficulties increase, hierarchical governance structures will be preferred. Market-like governance structures are usually preferable with a high level of uncertainty that requires higher flexibility (Williamson, 2010; Wever, 2012). Within the literature, different classifications of the available governance structures among this continuum have been provided. Based on the previous research of Raynaud et al. (2005), Wever et al. (2010) and Williamson (1991) five different governance structure can be identified as presented in Figure 5.

Figure 5 – Governance structures



Source: Raynaud et al. (2005)

Spot market relations are those in which exchanges are purely governed by price criteria. For governance structures based on **verbal agreement**, exchanges are not formalised in written documents and are usually characterised by long-lasting relationships. Contrary, **formal contracts** specify the exchanges details into written documents. When **equity-based contracts** are established, one of the

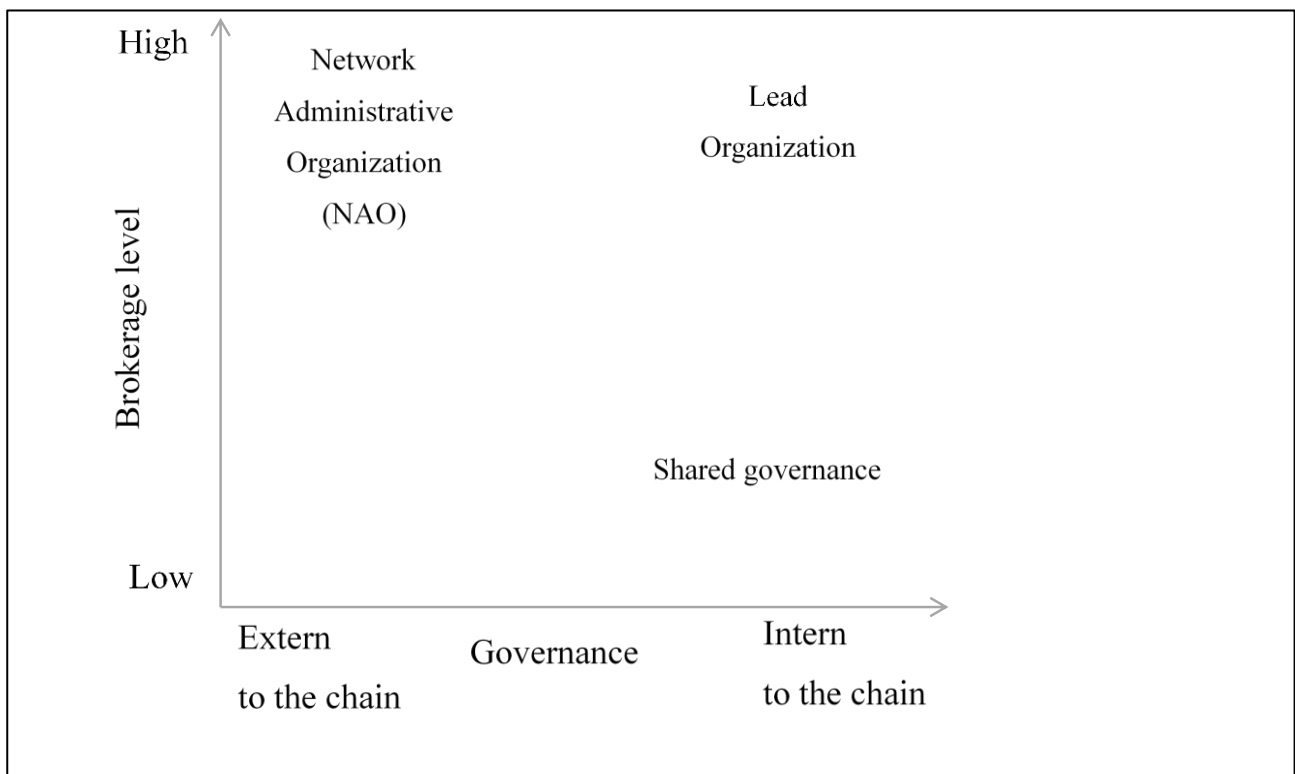
chain actors owns a stock of another independent actor. Lastly, **vertical integration** is present when the management and the ownership of different production and distribution stages are jointly undertaken by different actors (Denolf et al., 2015). However, the governance form of a value chain is unlikely to fall exactly into one of these categories and combination of different forms can exist. Furthermore, the governance structure initially adopted can change during the development of the partners' relationship (Miranda and Kavan, 2005).

Network governance

The governance of the value chain as a whole can also contribute to value chain collaboration. Therefore, it is not sufficient to consider just the role of bilateral agreements. Networks have been defined by Provan and Kenis (2008) as *“a group of three or more legally autonomous organisations that work together to achieve not only their own goals, but also a collective goal”*. Therefore, network governance represents the set of mechanisms adopted by the different organisations participating to the same value chain to support an enhanced level of collaboration, aiming at achieving higher performances both on the organisation and chain levels (Barratt, 2004; Provan and Kenis, 2008; Alvarez et al., 2010). As the research objective is to investigate how the governance of a value chain can facilitate its value co-creation and capture potential (which acts as the common goal of the chain actors in this case), it is relevant to include network governance.

Provan and Kenis (2008) proposed different network governance structures characterised along two dimensions. The first dimension distinguishes between network governance brokered and not brokered. The former refers to those networks characterised by direct organisation-to-organisation interactions and by the presence of a single organisation responsible for the governance of the whole network (Provan and Kenis, 2008). Contrary, the latter represents networks governed by all the organisations taking part to the network, with all the actors involved in the governance. This implies a high level of interaction among the various organisations (Provan and Kenis, 2008). The second categorisation dimension looks at whether the networks are externally, or participant governed. According to the authors, participant governed networks can be distinguished between those governed by one (lead) organisation or by all the network organisations (shared governance) (Provan and Kenis, 2008). By adopting this categorisation framework, three network governance structure can be identified: shared governance, lead organisation governance and governance by a network administrative organisation (see Figure 6) (Provan and Kenis, 2008).

Figure 6 – Network governance structure



Source: Adapted from Provan and Kenis (2008)

Shared governed networks

All the members of the network, or most of them, are involved in the network governance. Consequently, the resulting chain can be described as decentralised and collective self-governed network (Provan and Kenis, 2008). Regular meetings among the participating organisations are scheduled to jointly govern the network (Provan and Kenis, 2008). Moreover, shared governed networks are usually composed only of a low number of participants with nearly symmetrical power division and sharing high trust level (Provan and Kenis, 2008).

Lead organisation governed networks

Only one organisation is entitled to govern the network (Provan and Kenis, 2008), therefore power asymmetry is present among the chain actors, with the presence of a very powerful lead organisation who monitors and controls less influential members (Provan and Kenis, 2008). Besides the attention that is paid to power in research on network governance, the role of power is also addressed in the literature on global value chain governance, by authors as Gereffi et al. (2005). Gereffi et al. (2005) recognised the importance of power asymmetry in the governance of supply networks. Power can result from different sources, coercive and non-coercive power (Hunt and Nevin, 1974; Leonidou et al., 2008). For sources of non-coercive power, individuals willingly yield power to another individual (non-aggressive), while for coercive power there are potential punishments which make individuals

yield power to another individual (aggressive) (Hunt and Nevin, 1974; Leonidou et al., 2008). Within the group of sources of non-coercive power, reward, expert, legitimate, referent and information can be distinguished (Leonidou et al., 2008). By using its power, the lead organisation can influence the decision making and actions of other members in the network (Kähkönen and Tenkanen, 2010).

Network Administrative Organisation-governed networks

Network Administrative Organisations (NAOs), or facilitators, represent parties external to the network that have been established to govern the network's activities (Provan and Kenis, 2008). Similarly, to the lead organisation governance structure, only one organisation is entitled to deal with governance issues, however, NAOs do not represent network members (Provan and Kenis, 2008).

To conclude, it must be noted that this classification, based solely on ideal governance structures, could not be able to completely capture the wide range of aspects related to governance. Indeed, governance structures can be further analysed as a combination of transactions' coordination mechanisms (Martins et al., 2017). Consequently, in the following section, the concept of governance as coordination mechanisms will be further discussed to provide a complete description of the governance concept and more precise insights on how governance structures coordinate different transactions' aspects (Martins et al., 2017).

2.4.2 Governance as Mechanism

Governance structures can be seen as a unique combination of specific coordination mechanisms (CMs) of diverse aspects of transactions and their study enables a better understanding about the different governance structures these mechanisms make up (Martins et al., 2017). Therefore, in the following sections, the governance concept is investigated also in terms of coordination mechanisms.

Governance as formal coordination mechanisms

The different types of governance coordination mechanisms have been analysed by the TCE theory. Formal coordination mechanisms refer to the adoption by chain actors of explicit contracts established to reduce the uncertainty related to their transactions (Ghosh and Fedorowicz, 2008). Formal contracts, as a governance mechanism, are adopted both to delineate authority and responsibility structure, and to establish risk sharing schemes among chain partners (Ghosh and Fedorowicz, 2008). A CMs analytical framework has been proposed by Wever (2012), which recognised four main typologies of formal coordination mechanisms (Price, Volume, Quality and Incentive) that place themselves in different positions along the continuum between market-like and hierarchical governance structures (see Table 4). It is improbable that, within a GVC, actors will adopt just one of these types of coordination mechanisms that are more likely to coexist, especially, in collaborative

value chains (Martins et al., 2017; Ramon-Jeronimo et al., 2017). Indeed, several authors support the idea that a combination of different governance mechanisms and structures are adopted across the various stages in a value chain to coordinate the different relationships among the chain partners (Pilbeam et al., 2012).

Table 4 – Coordination Mechanisms and Governance structures

Coordination mechanisms	Variables	Values			
		Market		Hierarchy	
Price	<ul style="list-style-type: none"> - Setter - Duration - Bonus criteria 	Spot price with/without price bonus	Reference market price with/without variable bonus	Fixed forward price with/without variable bonus	Internal price with/without variable bonus
Volume	<ul style="list-style-type: none"> - Duration - Amount 	Spot volume	Fixed volume with min/max deviations	Fixed volume	Internal volume
Quality	<ul style="list-style-type: none"> - Setter - Monitor 	Spot market specifications/ Public framework	Third party quality coordination	Counterparty quality coordination	Internal quality coordination
Investments	<ul style="list-style-type: none"> - Types - Sources 	No (external) investments used	Debt security	Convertible debt security	Equity security

Source: Adapted from Martins et al. (2017)

Governance as informal coordination mechanisms

According to Alvarez et al. (2010), governance is not just about formal mechanisms of coordination, contrarily also informal governance forms can be adopted by chain actors. From the one side, contracts can be described as formal forms of governance, as they are based on explicit control systems. From the other side, informal coordination mechanisms based on implicit social norms, conventions, or other types of relationships also exist (Alvarez et al., 2010).

It is unlikely that a value chain will adopt just one of the two mechanisms of governance, rather it will usually adopt a combination of the two (Ghosh and Fedorowicz, 2008). Indeed, both formal and informal coordination mechanisms seem to be relevant in the relationships management among the various actors. According to Larson (1992), the former represent reference principles on which the

alliance is operated, and the latter are the glue that keeps the alliance together. The balance between the two is essential to the successfulness of interorganizational relationships, as the interaction between formality and informality in managing behaviour uncertainty leads to stable relationships (Ramon-Jeronimo et al., 2017).

When analysing governance as informal coordination mechanisms, trust and commitment have been widely recognized to be two relevant forms of informal coordination mechanisms (Alvarez et al., 2010; Ramon-Jeronimo et al., 2017; Kwon and Shu, 2005). According to the literature review made by Hudnurkar et al. (2014) on the factors affecting collaboration, there is a consensus about the fact that both trust and commitment constructs influence also the collaboration level in value chains.

Trust has been defined as “*a positive belief, attitude, or expectation of one party concerning the likelihood that the action or outcomes of another will be satisfactory*” (Hudnurkar et al., 2014). According to Oza (2006), trust can be seen as an important governance mechanism, which is influenced by and functions together with contracts and power in determining the successfulness achieved by collaboration activities in a value chain. Initially, trust rests on the existence of contractual agreements and the reputation and past experiences of the partners. Eventually, communication (or information sharing), commitment and other relationship characteristics become more relevant to maintaining and further increasing trust in a relationship (Oza et al., 2006).

According to Ghosh and Fedorowicz (2008), there are four main type of trust having a high potential to explain coordination differences within value chain relationships:

- **Calculative trust:** it represents an ongoing, market-oriented, economic calculation to evaluate the advantages and the costs associated with the creation and sustainment of a relationship. It reflects an assessment of a partner’s likely cooperation, based on the partner’s qualities and social constraints. Calculative trust is developed in the starting phase of business relationships.
- **Competence trust:** it reflects the ability of a chain actor to perform a task it is supposed to perform. It covers technical, operational, human and financial abilities. It develops when the skills needed to perform a task reside across partners. The other factor that contributes to its development is the level of the search undertaken by one party for those skills before selecting the right partner to enter such relationship. As calculative trust, competence trust develops during the early interaction phase.
- **Trust in integrity:** it is related to the belief that a trustee makes good faith agreements, tells the truth and fulfils promises. Consistency and loyalty are two components of integrity. Integrity is based on the experience of interpersonal relationships between the trustee and the

trustor and more specifically on their perceptions of each other's past behaviour. Integrity is important in a value chain due to the presence of numerous players with potentially conflicting goals and the existence of written and oral promises to be fulfilled.

- ***Trust in predictability***: it concerns the trustor's belief that a trustee's actions are consistent so that they can be always forecasted in relation to past patterns of behaviour. Relationship development explained by this type of trust depends on an ability to predict outcomes with a high probability of success, which is key to the effective and uninterrupted operation of a chain.

When trust is limited between the parties, formal contractual agreements are commonly established to enhance their legal obligations. In turn, over time, consistent adherence to contractual terms helps to build trust (Handfield and Bechtel, 2002). However, this does not imply that contracts always precede trust. Even in case of well-established relationships, where there is a strong trust basis, the chain actors usually rely on formal contracts as they provide the fundamental principles on which the relationship is based (Ghosh and Fedorowicz, 2008).

Trust is itself influenced by the presence of asymmetrical power distribution among the chain participants. In other words, the presence of an actor detaining higher bargaining power, if compared to its partners, influences trust. When a source of power is exercised, it is likely to have a negative impact on trust. Contracts are commonly used to reduce mistrust due to unequal power levels in a value chain (Ghosh and Fedorowicz, 2008). Formal contracting increases initial transaction costs but may increase the level of trust. Contracts are also used to set the ground rules for new relationships in the absence of pre-existing trust, or to remind partners of agreed-upon conditions or exceptions as time goes by (Dyer and Chu, 2003).

Commitment refers to “*the willingness of trading partners to exert effort on behalf of the relationship and suggests a future orientation in which firms attempt to build a relationship that can be sustained in the face of unanticipated problems*” (Hudnurkar et al., 2014). Previous studies by Kähkönen and Tenkanen (2010) determined that when a lack of commitment is observed the value chain actors are less inclined to share information. Moreover, a lack of commitment undermines the relationships among the value chain actors (Kwon and Suh, 2005). Two different types of commitment have been identified by Micheels and Gow (2011). From the one side, commitment could be voluntary and process-based when a chain actor commits itself to the value chain because of the reputation of the other chain actors or because of previous positive transactions (Micheels and Gow, 2011; Vieira and Traill, 2008). From the other side, commitment could be enforced via the specific investments and

institutions-based, when one chain actor invests in a specific asset to participate to the value chain (Vieira and Traill, 2008; Micheels and Gow, 2011; Boehlje, 1999).

2.5. Business Environment

Both the questions of governance and collaboration under discussion occur within the boundaries of a specific business environment (Williamson, 2008; Roep and Wiskerke, 2012; Pilbeam et al., 2012). Interorganizational relationships do not take place in a vacuum, as firms are embedded into a certain business environment that shapes the way in which they develop (Claro et al., 2003). According to Fischer et al. (2009), market, industry and enterprise-specific characteristics influence the type of contracts chosen to coordinate the chain actors' relationships. Consequently, the configuration of a GVC into specific governance structures and coordination mechanisms may depend both on firm's external and internal characteristics. Among the external conditions, industry structure, level of uncertainty, changing technology, etc., may play a major role (Hernandez and Pedersen, 2017). To better understand the whole chain's mechanisms and performance, it is critical to investigate the evolution of the industry to which it pertains, the trends that have shaped it, and its organization (Gereffi and Fernandez-Stark, 2016). The **level of uncertainty** is one of the contextual characteristics that have been found to have a major impact on the governance mechanisms adopted and consequently on the performance outcome of the whole chain (Pilbeam et al., 2012; Claro et al., 2003). Williamson (1991) affirmed that governance structures differ in their efficacy in relation to asset specificity and uncertainty, where higher levels of asset specificity and uncertainty result in the preference for more hierarchical modes of governance. According to the scholars of the TCE Theory, when chain actors select a specific governance structure they should match it with the existing level of business uncertainty they have to deal with (Martins et al., 2017). For instance, to face uncertainty a chain actor could decide to adopt a governance structure based on formal mechanisms of control over the operations and decisions undertaken by the other actors in the chain. To conclude, this research will focus on the concept of uncertainty as one of the most relevant contextual factor affecting the value co-creation and capture potentials of GVC through its relationship with the adopted governance and collaboration activities. Indeed, New Zealand food GVC are facing uncertainty about the competencies needed to gain chain competitive advantage in the global market. Consequently, the author tried to better investigate how the level of uncertainty associated with the business environment, where those chains are operating, affect the chain governance forms and collaboration activities.

Within previous research, uncertainty has often been operationalized in the constructs of environmental and behavioural uncertainty (Alvarez et al., 2010; Martins et al., 2017). Environmental

factors of uncertainty included political, policy, macro-economic, social and natural uncertainty. Examples of **environmental uncertainty** are changing customer requirements and information on quality, variable market conditions and public regulations. Increases in the level of environmental uncertainty are related to raises in transaction costs (Pilbeam et al., 2012; Martins et al., 2017). One of the main consequence of the presence of environmental uncertainty is the impossibility to design complete contractual clauses when formal governance mechanisms and structures are adopted by the value chain actors. The incompleteness of contractual clauses encourages the adoption of opportunistic behaviour by chain actors when informal governance mechanisms (i.e. trust) are not established (Ramon-Jeronimo et al., 2017).

According to previous studies, **behavioural uncertainty** can emerge through the presence of differences in the chain actors' size, role and relationship history. These factors have been found to have an impact on the selection of specific governance forms as they affect the relationships among the different organisations participating to the value chain (Contractor et al., 2011; Claro et al., 2003; Pilbeam et al. 2012, Hernandez and Pedersen, 2017). Moreover, according to the TCE theory, behavioural uncertainty exists when it is present the risk that one of the chain contracting partners behave opportunistically towards the other party (Niesten and Jolink, 2012). Opportunism is likely to be always present in every contractual relationship before signing a contract and during the contract execution (Niesten, and Jolink, 2012). Williamson (1991) adds that opportunistic behaviours could arise both in presence of formal contracts ("blatant form of opportunism") and informal agreements ("lawful opportunism"). Opportunistic behaviours could be further categorised in passive and active. From the one side, passive opportunistic behaviours regard situations where a chain actor withhold the contracted efforts and obligations. From the other side, active opportunistic behaviours can be observed when a chain actor intentionally breaks down a contract (Wathne and Heide, 2000).

3. Conceptual model

Within this chapter, the author will present the conceptual framework elaborated after the literature review. Moreover, the propositions emerging from the conceptual framework are also discussed. Indeed, due to the qualitative approach of this research, it was not possible to formulate measurable and testable hypothesis. Therefore, propositions were used as a tool to suggest linkages among the analysed concepts in a context where that linkage could not be verified by an experiment. Consequently, the elaborated propositions strongly rely on previous findings from the available literature and related reasonable assumptions.

From the literature review just presented, a theoretical framework has been developed as depicted in Figure 7. In that figure, the main relationships expected to be present among the investigated variables are shown. It could be seen that the business environment notion will be assessed through the two main dimensions of environmental uncertainty and behavioural uncertainty. These two dimensions of the business environment in which a GVC is embedded are likely to influence the choice of a specific governance form over another (Wever et al., 2010; Pilbeam et al., 2012; Claro et al., 2003). Moreover, according to Gosh and Fedorowicz (2008), it seems that the adopted governance forms affect the level of uncertainty associated to the GVC business environment too. Consequently, a mutual influence between the business environment and the governance constructs is expected to be present. To continue, the governance form concept is spread into the two constructs of governance structures (including bilateral agreements and network governance) and mechanisms (both formal and informal). Moreover, Figure 7 shows that the adopted form of governance can influence the chain collaboration level (assessed through the constructs of information sharing, decision synchronization and incentive alignment activities) as supposed by several previous studies (Ramon-Jeronimo et al., 2017). Looking at the interrelationship between collaboration and governance, a mutual influence seems to be present as well as in the case of governance and business environment. For instance, Oza et al. (2006) suggested that the higher the level of information sharing among the chain actors, the higher the level of trust and vice versa. Additionally, through the constructs of governance (as trust level), collaboration seems to negatively influence the level of behavioural uncertainty characterising the GVC business environment (Oza et al, 2006). Lastly, Figure 7 represents how the outcome of the described constructs relationships impacts the (tangible, intangible and knowledge) value co-creation and capture potential of the whole chain (value for partners) (Ramon-Jeronimo et al., 2017). Therefore, the value co-created and captured by the chain actors is expected to be the result of the reciprocal interactions among the governance, collaboration and business environment dimensions in which a GVC is embedded and where changes in one of these dimensions are expected to lead to

changes in all the other dimensions (dotted lines) (Reypens et al., 2016). For instance, the initial business environment characteristics, both in terms of environmental and behavioural uncertainty levels, affect the primary network governance form adopted. Namely, the chain actors to be included in the network, the activities for which they are responsible and the governance mechanisms to regulate their interactions. Over time, the evolution of the original environmental conditions, together with the outcome of the network activities will result in the evolution of the network itself (Alvarez et al., 2010).

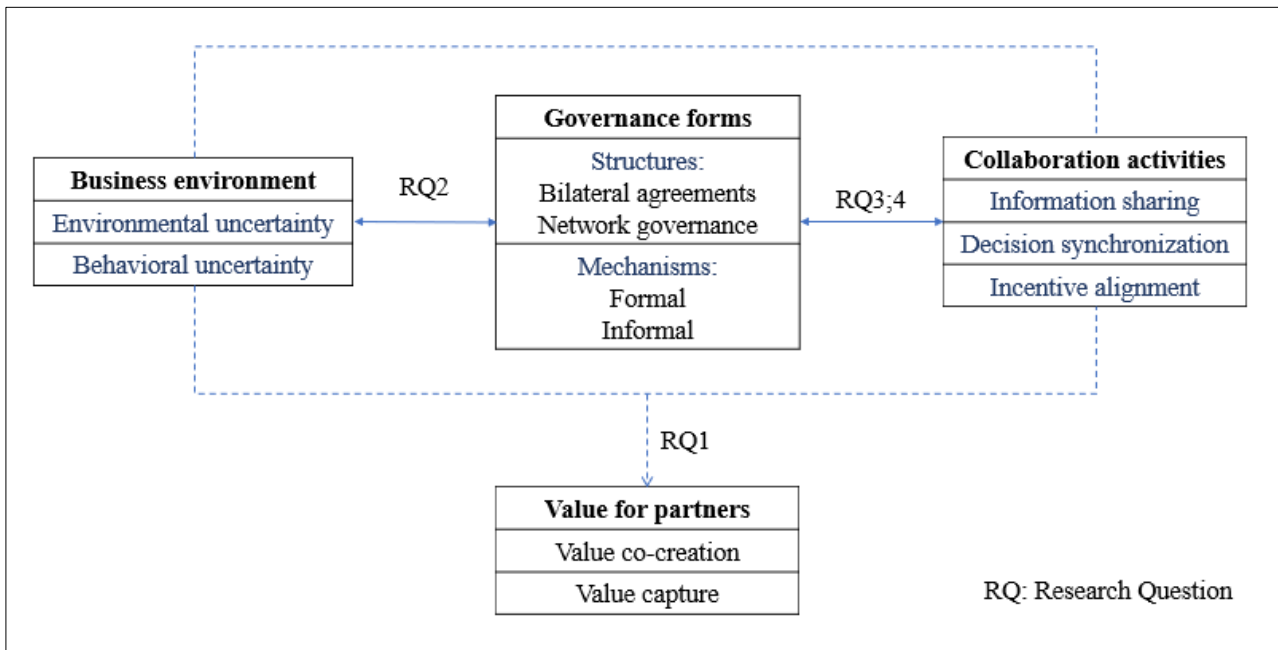


Figure 7 – Conceptual Framework

3.1. The role of Business environment

Within this section, the expected role of business environment is described through the formulation of specific propositions.

As shown in Figure 7, governance forms develop under the influence of a specific business environment. According to Aguilera et al. (2011), the choice of specific governance structures and mechanisms in interfirm relationships across industries and countries are rooted in different institutional settings that determine the degree of uncertainty and eventually governance choices. Indeed, the weaker the institutional setting specific of a country, the higher the level of environmental risk of the same country (Contractor et al., 2011). Increases in the environmental uncertainty level will boost the information asymmetry existing among the partners. For this reason and to prevent opportunistic behaviours, hierarchical forms of governance will be preferred over spot-market relationships (Pilbeam et al., 2012; Claro et al., 2003; Contractor et al., 2011). Thus, to handle environmental uncertainty a chain actor may adopt hierarchical governance structure and formal

mechanisms of control on its partners. However, high level of unpredictability of the business environment can impede the effective adoption of hierarchical governance structure and formal control mechanisms to protect and implement successful business relationships. To deal with this risky situation, the chain actors may, thus, decide to employ hybrid governance forms to absorb the environmental instability through higher forms of collaboration such as joint planning and problem solving (namely, decision synchronisation) (Claro et al., 2003). The same idea has been supported also by Matopoulos et al. (2007), who argued that some industry's macro-factors (i.e. globalisation, changing consumer attitudes and stricter food regulations) positively impact collaboration intensity as well. For instance, the authors found that in agri-food value chains as a response to changing consumer attitudes and preferences value chain actors have increased the level of joint strategic-level decisions to match their value proposition with the new consumers' requirements. Moreover, information sharing is strongly affected by quality regulations too (environmental uncertainty) (Denolf et al.; 2014). Quality regulations play a key role as they demand chain actors to share precise information to verify if the quality standards have been met. This finding is confirmed also by Naspetti et al. (2011), who found that the higher the perceived risk in terms of quality and safety compliance, the higher the level of collaboration, especially, in the information sharing domain. Furthermore, Hobbs and Young (2000) recognized other two environmental uncertainty components within the agri-food sector, namely, product quality and price uncertainty. As the uncertainty level faced by the chain actors increases, the value chain is expected to move away from spot market transactions to rely on more integrated forms of exchanges because of the higher costs of information sharing and monitoring activities associated with spot market (Hobbs and Young, 2000).

P1a: When environmental uncertainty is high to effectively adopt hierarchical governance structures and control-based coordination mechanisms, chain actors are expected to rely on hybrid governance forms.

P1b: When environmental uncertainty is high, chain actors are expected to adopt hybrid governance forms to enable higher levels of collaboration through increased decision synchronisation and information sharing.

Regarding the effect of behavioural uncertainty on governance, the choice between formal and informal governance mechanisms critically depend on the relationship history of the chain partners. According to Pilbeam et al (2012), if already established relationship exists informal contracts are preferred over more formal control mechanisms. In the presence of new relations, partners' transactions are likely to be more formally governed through the adoption of explicit contracts, namely, formal governance mechanisms (Pilbeam et al., 2012; Alvarez et al., 2010). Moreover,

Pilbeam et al. (2012) affirm that as the history of relationships among the chain members grows, the adoption of informal governance mechanisms increases as well, and it results in improvements in chain performance. Claro et al. (2003), added that the adoption of hybrid governance structures does not exactly depend on the length of the chain actors' relationship. Contrarily, when selecting a specific governance structure, they found that the quality of the established relationship positively affects the selection of hybrid governance structures.

Moreover, the actor's role within the value chain seems to affect both the governance structure and mechanisms adopted. Indeed, perspective asymmetry about the usefulness of different governance structures and mechanisms exists among the various chain actors, which leads to behavioural uncertainty (Claro et al., 2003). To deal with these different perspectives, usually both formal and informal governance mechanisms and hybrid governance structures are adopted to reach a higher level of value co-creation and capture in collaborative value chains embedded in a determined business environment (Claro et al., 2003).

Furthermore, Williamson (1999) matches different behavioural uncertainty levels to different governance structures. According to him, spot market relations are selected in the presence of standardized transactions among the chain actors. In this case, he expected the degree of behavioural uncertainty not to affect the governance choice because, with spot market relationships, chain actors can easily switch to another contracting party without losing value. While, when asset-specific investments characterize the actors' relation, behavioural uncertainty turns out to impact the governance choice (Williamson, 1999). According to Williamson (1999), asset-specific transactions are better organized in hybrid governance structures. The same idea is also supported by Hobbs and Young (2000), who argued that highly frequent transactions between chain actors are usually executed in the spot market. The authors identified two main behavioural uncertainty components, buyer uncertainty and seller uncertainty. Buyer may face uncertainty regarding the reliability of supply in terms of timeliness and quantity; sellers may deal with uncertainty in finding a buyer, especially when their products are characterized by idiosyncratic features. As said for environmental uncertainty, when behavioural uncertainty increases value chain actors are expected to move away from spot market transactions to rely on more integrated forms of exchanges (Hobbs and Young, 2000).

P2a: With a high level of behavioural uncertainty, if already established positive relationships exist, chain actors are expected to rely on hybrid governance structures and a balanced combination of formal and informal contracts.

P2b: With a high level of behavioural uncertainty, if asset-specific investments have been made, chain actors are expected to rely on hybrid governance structures.

As previously said, governance mechanisms must be designed to accommodate potential conflicting objectives and perspectives of the different chain members. To achieve this goal, trust, power and contracts are three important elements shaping interorganizational governance and reducing behavioural uncertainty (Alvarez et al., 2010; Ghosh and Fedorowicz, 2008). Previous studies have emphasized the effect of trust and commitment between the chain actors in reducing the risk of opportunistic behaviours (Bianchi and Saleh, 2011). In turn, behavioural uncertainty has also been recognized to impact the trust level among chain actors. According to Known and Suh (2004), trust is negatively associated with behavioural uncertainty and positively associated with asset-specific investments. Moreover, both formal and informal coordination mechanisms seem to be relevant in the relationships management among the various actors. According to Larson (1992), the former represent reference principles on which the alliance is operated, and the latter are the glue that keeps the alliance together. Indeed, it is unlikely that a value chain will adopt just one of the two mechanisms of governance, rather it will usually adopt a combination of the two (Ghosh and Fedorowicz, 2008). The balance between the two is essential to the successfulness of interorganizational relationships, as the interaction between control and trust in managing behaviour uncertainty leads to stable relationships (Ramon-Jeronimo et al., 2017). Furthermore, trust and commitment have been described as two interconnected constructs. Indeed, the presence of trust by a chain actor in the other chain members strengthens his willingness to be committed to this chain (Karami et al., 2015; Kwon and Suh, 2005; Micheels and Gow, 2011). Therefore, both trust and commitment are crucial elements in the relationships among value chain actors when aiming at achieving superior value co-creation by reducing behavioural uncertainty (Elg and Tarnovskaya, 2008; Micheels and Gow, 2011).

P3a: The presence of trust and commitment among the chain actors is expected to lead to superior value co-creation by reducing the level of behavioural uncertainty.

P3b: It is expected that trust-based governance mechanisms are not sufficient per se, rather they must be balanced with control-based governance mechanisms to lead to superior value co-creation.

3.2. The role of Governance

Within this section, the expected role of governance on the constructs of collaboration and value co-creation is described through the formulation of specific propositions.

Governance as a structure

Network governance

As described in section 2.4.1 (Governance as structure), the governance of the value chain as a whole can take three different structures, which are shared governance, lead organisation and network administrative organisation. Hereafter, the expected influence of these three types of governance on the other analysed constructs will be discussed through the formulation of specific propositions.

Unfortunately, the available literature on how network governance affects the level of value chain collaboration and the value co-creation and capture processes is quite poor. However, it is likely that network governance does influence these constructs in various ways (Van Velzen, 2016). Concerning the lead organisation governance structure, it could be noticed that usually in the food industry the retailing companies detain a leading role thanks to their closeness to the end consumers and, thus, their advantageous access to valuable market information (Kähkönen and Tenkanen, 2010). Frequently, these chain actors tend not to share these valuable data with the rest of the chain members due to the fear of losing their leading position (Van Velzen, 2016; Grunert et al., 2005). Consequently, from the one side, it could be expected that the adoption of lead organisation governed networks will have a negative impact on information sharing. From the other side, the chain leading organisation and the NAO usually assist the other chain members in adapting the supplied products to adhere to changing legislative and end consumers' requirements (Van Velzen, 2016; Leonidou et al., 2008; Elg, 2008). Therefore, they contribute to reducing the degree of environmental uncertainty faced by the entire chain. Contrarily, within networks characterised by shared governance regular meetings among all the network participants are undertaken to coordinate the chain (Provan and Kenis, 2008). As sustained by Van Velzen (2016), it is likely that during these meetings, market information is shared among all the actors. Moreover, Provan and Kenis (2008) affirmed that within networks a conflict between administrative efficiency and inclusive decision making could be observed. According to the same authors, shared governance networks prefer inclusion over efficiency; lead organization governed networks prefer efficiency; and in NAO governed networks try to find an equilibrium between the two, but prefer efficiency (Provan and Kenis, 2008). Therefore, it could be expected that shared governance will positively influence information sharing and decision synchronisation.

P4a: The adoption of lead organisation governed networks is expected to negatively influence information sharing activities. By contrast, shared governance is expected to result in enhanced information sharing activities.

Furthermore, network governance seems to have an impact also on the bilateral governance mechanisms adopted among the value chain actors (Van Velzen, 2016). Indeed, Pilbeam et al. (2012)

suggested that the choice between formal and informal governance mechanism is influenced by the presence of asymmetries in the power distribution along the value chain. In case of lead organisation governed networks, power asymmetry is usually observable along the value chain (Provan and Kenis, 2008), thus a preference for the adoption of formal governance mechanisms is expected (Pilbeam et al., 2012). Contrarily, with shared governance a higher level of power symmetry can be expected to result in the tendency to adopt more informal governance mechanisms (Pilbeam et al., 2012). Moreover, previous studies have determined the presence of a negative effect of leadership on the constructs of trust and commitment when leadership is the result of coercive power. By contrast, when leadership is derived from a non-coercive source of power, it positively influences trust and commitment (Grunert et al., 2005; Kähkönen and Tenkanen, 2010; Leonidou et al., 2008). Concerning shared governed networks, Provan and Kenis (2008) and Van Velzen (2016) argued that the regular meetings undertaken together by the different actors can contribute to the development of mutual trust and commitment.

P4b: Lead organisation governed networks are expected to lead to the adoption of formal governance mechanisms if high levels of power asymmetry are present. Contrarily, shared governance is expected to result in the adoption of informal governance mechanisms due to a higher level of power symmetry among the chain actors.

P4c: When leadership is the result of non-coercive source of power, it is expected to positively affect trust and commitment such as shared governance.

Bilateral Agreements

According to Wang and Wei (2007), many studies from the TCE literature, have investigated the effectiveness of hybrid governance structures, which are between pure market and hierarchy, for governing interfirm relationships as the transactional context becomes increasingly complex. Heide and John (1992) hold that relational governance (the one based on relational norms, those aiming at the achievement of the success of the entire chain) is an important hybrid structure that allows exchange partners to adapt flexibly in responding to uncertainty. According to Jain and Dubey (2005), the selection of an effective governance structure can generate value through the reduction of transaction costs or the enhancement of collaborative value co-creation activities such as assets-specific investments, information sharing, resources sharing, etc. Namely, it could be expected that the adoption of a proper governance structure enhances the value co-creation potential of a value chain by facilitating the level of collaboration throughout the entire chain. For instance, Simatupang and Sridharan (2005) affirm that it could be expected that to achieve an effective decision synchronization process structures of governance away from the spot-market relationships will be

preferred. Furthermore, Bailey and Francis (2008) claim that information sharing is not sufficient per se. For instance, it may create some problems as information leakages and disproportionate allocation of information benefits in the value chain. Within this context, Denolf et al. (2014) have recognized the relevance of selecting a suitable governance structure to contain these issues. They found that the adoption of appropriate transaction arrangements among the chain actors may reduce the chance of opportunistic behaviour and eventually lead to improved collaboration. Furthermore, the authors found that actors in a chain with more integrated governance structures tend to share more kinds of information, specifically more process information (Denolf et al., 2014). A possible explanation is that more integrated governance structures limit the risks of opportunisms and minimise the risk of information leakages. The same result is also supported by Dyer and Singh (1998), who argued that, through effective governance, collaborative value chains can achieve higher relational rents. Therefore, governance could be seen as the structure ensuring that decisions are made that lead to long-term, sustainable value through collaboration among the different chain actors (Monks and Minow, 2004).

P5: The selection of hybrid governance structures is expected to facilitate value chain collaboration and, in turn, enhance value co-creation activities.

Governance as coordination mechanisms

According to Pilbeam et al. (2012), both formal and informal governance mechanisms impact the value chain performance. From the one side, informal governance mechanisms are usually adopted for transactions of intangible goods, such as innovative ideas. From the other side, formal governance mechanisms tend to be positively associated with products exchange and processes coordination. Therefore, it could be expected that in successful value chains formal contracts and trust will coexist as formal and informal governance mechanisms adopted to coordinate the exchanges among the different actors. Other studies suggest that to address higher information leakage risk the combination of formal and informal governance mechanisms are considered a tool to mitigate inter-organizational information sharing difficulties (Ghosh and Fedorowicz, 2008). Furthermore, according to Matapoulos et al. (2007), trust represents a key governance mechanism in affecting the establishment and the maintenance of collaboration among the value chain members in the agri-food sector. A lack of trust among the parties seriously limits the intensity of collaboration by reducing the width and the depth of collaboration activities. For instance, while collaboration can be achieved on a tactical and operational level, as well as on a logistic one, it results to be difficult to collaborate on more complicated activities such as new product development and joint demand management when trust levels are low. According to Wang and Wei (2007), the adoption of trust and commitment as

governance mechanisms increases the level of information visibility among the different chain actors that, in turn, mitigates the level of uncertainty faced by the entire value chain. Additionally, trust and long-term commitment enable an increased level of offering flexibility of the value chain. Thus, the presence of trust and commitment, together with hybrid governance structures, are recognized to have a significant positive effect on the value co-creation capability of the value chain, rather than the simple adoption of formal contracts or vertical integration. According to the authors, informal information sharing can bring relevant external information and tacit knowledge exchanges among the chain partners when good long-term relationships have been developed (Wang and Wei, 2007). In line with this view, previous TCE studies have largely emphasized control governance mechanisms as crucial elements in the reduction of transaction cost (Heide and John, 1990). However, successful value chains are not simply cost efficient, but they are flexible in dealing with unstable environments as well. For instance, they easily adapt their operations to changing market circumstances as the introduction of new technologies or new and shorter product-life-cycle (Beth et al., 2003). To achieve higher levels of value chain flexibility control is not sufficient, rather it is necessary to build a trustful and aligned relationship which strongly enhance the effectiveness of information sharing. Moreover, a solid trust basis does not only facilitate information sharing (Moberg et al., 2002), trust can also substitute reciprocal monitoring activities (Beth et al., 2003). To conclude, a balanced combination of formal and informal governance mechanisms together with the adoption of hybrid governance structures lead to higher value co-creation not only by reducing transaction costs, but also by increasing the value chain flexibility (Dyer and Chu, 2003). Formal contracts alone cannot effectively support long-term collaboration within an unstable and uncertain business environment. The absence of trustful relationships and commitment among the chain actors refrains a flexible cooperative relationship to control resources and to create value (Young et al., 2003).

P6a: It could be expected that a balanced combination of formal and informal governance mechanisms will enhance the value co-creation ability of collaborative value chains operating in a dynamic business environment.

P6b: The adoption of informal governance mechanisms (trust and commitment) is expected to increase the value co-creation ability of collaborative value chains by increasing their flexibility and information visibility.

To conclude, it is relevant to better investigate the relation between value chain governance forms and incentive alignment, as the adoption of specific governance mechanisms seems to influence the effectiveness of incentive alignment. In effect, Narayanan and Raman (2004) suggested that the adoption of formal mechanisms of governance (i.e. revenue-sharing contract) may increase the

alignment of incentives among different partner and, in turn, improve the successfulness of the whole chain.

P7: Formal coordination mechanisms are expected to increase the alignment of incentives among the different actors of the value chain.

3.3. The role of collaboration

Value chain collaboration has been recognised as a process able to facilitate the chain members to improve their individual and joint performance (Baratt, 2004; Simatupang and Sridharan, 2008). According to Tuominen (2004) and Chakraborty (2014), value chain collaboration and value co-creation are positively correlated. The same finding is supported by studies based on the value net perspective, which have recognized that value co-creation does not occur within the boundaries of individual firms, rather value is co-created within networks by the implementation of collaborative activities among the different chain actors that combine their complementary resources and competencies (Anthonen and Virolainen, 2009; Kahkonen, 2012). Therefore, collaboration has been widely recognized as extremely relevant to obtain better results in terms of value co-creation and capture by the entire value chain. According to Wang and Wey (2007), by applying the RBV to value chain management, previous studies have suggested that unique resources are present at the value chain level among which information visibility and value chain flexibility has been found to be relevant ones. These two capabilities are valuable in creating competitive advantage as no one firm can fully possess and develop them individually. Value chain information visibility can only be realized by firm-specific or transaction-specific information sharing between chain members. Value chain flexibility depends on the capability of the value chain partners to make proper and synchronised process adjustments. Furthermore, both capabilities involve a high level of integration, hence they result difficult to attain in spot market relationships. To conclude, these capabilities are valuable only when jointly developed and lose their value if a chain actor leaves the value chain (Wang and Wey, 2007). In relation to information visibility, Dyer (1997) has found that when information visibility is high control mechanisms directed at limiting behavioural uncertainty are very easy and associated with low monitoring costs. Thus, increased information visibility increases the value chain performance and the individual firm's decision-making capability. Moreover, high information visibility leads to improved integration of value-adding operation and support decision synchronisation among the value chain actors (Wang and Wei, 2007). This, in turn, will also improve the value chain offering flexibility. Namely, the ability of the chain partners to meet new end customer's requirements through effective changes in product offering. Moreover, Simatupang and Sridharan (2004) affirmed that collaboration consists of various elements, among which information

sharing, decision synchronisation and incentive alignment are those considered in this study. To achieve effective chain collaboration, all the collaborative elements must be properly balanced (Simatupang and Sridharan, 2008). Hereafter, the individual contribution of the analysed collaborative elements on value co-creation and capture is presented.

P8: When information sharing, decision synchronisation and incentive alignment are properly balanced, value chain collaboration is expected to be positively associated with value co-creation and capture through higher value chain information visibility and flexibility.

Information sharing

According to Hudnurkar et al. (2014), information sharing exerts a crucial role in the achievement of effective value chain collaboration. Through an extensive literature review about collaboration in the value chain, the authors found that information sharing is recognized as the most important factor affecting collaboration. Information sharing represents the collaboration dimension integrating all the other collaborative elements together (decision synchronisation and incentive alignment). What makes information sharing valuable to all the chain actors is its ultimate ability to enable better decisions and actions through an enhanced visibility of the whole chain. Indeed, information sharing facilitates decision synchronisation through providing relevant, timely and accurate information which are crucial to take effective long- (strategic) and short-terms (operational) decisions about the whole value chain (Simatupang and Sidharan, 2008). Information sharing directly impact incentive alignment too. Indeed, it makes available the information about the situation of incentive scores among chain actors and it also discloses how performance measures are linked to the incentives scheme (Simatupang and Sidharan, 2008). Information sharing is crucial for indicating to the various chain actors that incentives are offered, appropriate, unbiased, performance-contingent and timely (Simatupang and Sridharan, 2008a).

Even if, the collaborative construct of information sharing has been recognised as the most relevant one for those chains aiming at superior performance, nonetheless, shared information must exhibit certain attributes to create value. According to the objective of the actor receiving the data and depending on the way with which the information is used, the value of information will also depend on the degree to which it reflects essential data quality characteristics such as timeliness, trustworthiness, completeness, etc. (Simatupang and Sridharan, 2008; Wang and Strong, 1996).

P9: Timely, trustworthy and complete information sharing is expected to be the collaborative activity with the greatest impact on chain value co-creation as it is the basis for decisions synchronisation and incentive alignment.

Moreover, information sharing has been found to be indirectly associated with trust. According to Known and Suh (2004), information sharing decreases the level of behavioural uncertainty, which in turn increases the level of trust among the value chain partners.

P10: Information sharing is expected to be positively associated with trust, which in turn is negatively associated with behavioural uncertainty.

Decision Synchronisation

Even if each chain actor has decision rights for his own activities, such as ordering and stocking quantities, many times the individual capability to take the right decisions alone is very poor. Therefore, it results necessary to synchronise the decision-making process throughout the entire chain to increase the joint returns in terms of overall chain profit and to lower the total costs (Simatupang and Sridharan, 2008). Contrary, through individual decision-making often only sub-optimal results could be achieved both independently and collectively by the chain partners. Decision synchronisation, instead, enables synergistic benefits for all the chain actors (Fisher, 1997; Lee et al., 1997; Simatupang and Sridharan, 2008).

Analysing the relation between decision synchronisation and information sharing, decision synchronization facilitates the process of information sharing to identify how and what kind of information should be transferred along the various decision makers of the chain. Moreover, decision synchronisation processes can also support incentive alignment by providing justifications to create suitable incentive alignment schemes as different chain members are responsible for different levels of decision making (Simatupang and Sridharan, 2005).

P11: It is expected that through decision synchronisation, value chain actors can achieve higher value co-creation and capture by overcoming their limited individual decision capability, and by sustaining information sharing and incentive alignment along the chain.

Incentive Alignment

According to Narayanan and Raman (2004), value chain can be successful only when their incentive schemes are aligned. Incentive alignment schemes motivate chain actors to behave consistently with their mutual objectives and to make decisions that are optimal for the whole chain by sharing reliable information (Simatupang and Sridharan, 2002). When an effective incentive alignment scheme is implemented, it will generate value by improving the motivation and efficiency of all the actors, or by incentivising them to mobilise relevant information, or by enabling efficient decision right allocation, or by helping to overcome opposition to changes, etc. Indeed, Niesten and Jolink (2012) argued that if incentives misalignments are present among the chain actors, behavioural uncertainty

is present. Contrary, if incentives are aligned throughout the entire value chain, behavioural uncertainty is absent.

Furthermore, incentive alignment schemes influence also the efficacy of information sharing and decision synchronisation activities. The impact of incentive alignment on the other elements of collaboration is significant as it motivates the chain members to align their actions to the mutual purposes of collaboration that would eventually enhance both the overall and individual profitability of the chain actors. For instance, in relation to decision synchronization, incentive alignment motivate the chain members to make effective decisions reinforcing the desired level of performance (Simatupang and Sridharan, 2005; Simatupang and Sridharan, 2002).

P12: The adoption of effective incentive alignment schemes is expected to increase the chain value co-creation and capture potential by reinforcing the efficacy of information sharing and decision synchronisation, and by decreasing behavioural uncertainty.

4. Methodology

Within this chapter, the variables operationalisation, the research design, the case selection, the data collection and the data analysis methods adopted within this research project are presented.

4.1. Operationalisation of Business Environment

According to the findings of the literature review, one of the environmental factors deemed to have the highest level of influence on governance is the level of uncertainty. The latter notion has been operationalized in two main constructs, namely, the environmental and behavioural uncertainty.

Environmental uncertainty or “the extent to which the future state of a value chain operating environment could be accurately forecasted”.

The operating environment is considered here as the ensemble of political, economic, social and technological conditions, entities, events, and factors surrounding an organization that influence its activities and choices and determine its opportunities and risks (Citation [Def. 2]). Therefore, to measure the environmental level of uncertainty the following dimensions will be investigated:

- Political stability or the “degree to which fundamental policies and government are subject to changes”
- Economic stability or “a term used to describe the financial system of a nation that displays only minor fluctuations in output growth and exhibits a consistently low inflation rate” (Citation [Def. 1]).
- Technological uncertainty or “the extent to which it is possible to accurately predict or fully understand the different aspect of the technological environment”.

Behavioural uncertainty or “the extent to which the future behaviour (i.e. actions and decisions) of a value chain partner could be accurately forecasted”. According to the TCE Theory, behavioural uncertainty does exist because of the risk that contracting partners behave opportunistically and therefore harm the other contracting party (Nielsen, and Jolink, 2012). Namely, TCE assumes that opportunism is potentially present in every contractual relationship both at the ex-ante (before signing the contract) and ex-post (during the contract implementation) stages of contracting (Nielsen, and Jolink, 2012). Additionally, opportunistic behaviours may emerge both in presence of formal contracts (“blatant form of opportunism”) and informal agreements (“lawful opportunism”) (Williamson, 1991). Lastly, opportunistic behaviours could be distinguished between passive and active. The former concerns a situation where the contracting partners deny efforts, evade obligations or engage in quality shirking; the latter can be observed when contracting partners deliberately fail a

promise, for instance, by misrepresenting facts, selling in unauthorized area, or forcing the other partner to renegotiate the previous contract when circumstances change (Wathne and Heide, 2000).

According to the review of TCE research made by Macher and Richman (2008), it seems that very few operationalizations of behavioural uncertainty have been developed. Behavioural uncertainty has often been operationalized by determining the level of performance ambiguity (Anderson, 1985; Stump and Heide, 1996), which refers to the difficulty of determining if one of the parties to the transaction has reached the desired performance level or adhered to the contractual agreements made. Anderson (1985) concluded that when difficulties in measuring performance are present, the chance for opportunistic behaviours by the parties to the transaction is higher. The author utilizes different ambiguity performance items to identify behavioural uncertainty.

To measure the level of behavioural uncertainty, the presence of all these different types of opportunism will be investigated together with the following dimensions:

- Relationship history or “the established level of trust and commitment in an ongoing relationship”.
- Actor size or “the relative size, in terms of employees’ number and annual turnover, of a contracting partner with respect to the other partners”.
- Actor role or “the contracting partner key responsibilities within the value chain”.

In the table below (Table 5), an overview of the construct of business environment in terms of uncertainty is provided as adopted throughout the entire study.

Table 5 – Environmental and Behavioural Uncertainty Operationalisation

Uncertainty level of the Business Environment	
Environmental Uncertainty	Behavioural Uncertainty
Economic stability Technological uncertainty	Relationship history Actor relative size Actor role

4.2. Operationalisation of Governance forms

As showed by the literature review, the notion of governance has been operationalised in several different ways by the different authors. To cite one, Berger (2003) operationalised the governance concept in ‘governance as structure’ and ‘governance as process’. The existence of such a huge amount of different governance definitions witnesses the complexity of the governance notion, which is also reflected on the vast amount of studies that has been conducted by taking into analysis many different governance dimensions and that make governance still a fragmented concept lacking comprehensiveness (Jain and Dubey, 2005; Pilbeam et al., 2012). To better understand the role of

governance in the GVC context, this research will operationalise the latter into two main constructs as shown in Table 6.

Table 6 – Governance Forms Operationalisation

Governance forms	
Governance as <i>Structure</i> : (Raynaud et al., 2005; Wever et al., 2010; Williamson et al., 1991)	Governance as <i>Mechanisms</i> : (Alvarez et al., 2010)
BILATERAL AGREEMENTS	FORMAL MECHANISMS
Spot-market Verbal agreement Formal contract Equity based contract Vertical integration	Contracts
NETWORK GOVERNANCE	INFORMAL MECHANISMS
Shared governance Lead organisation Network administrative organisation (NAO)	Trust Commitment

Governance forms will be investigated both as governance structures and mechanisms. Governance is the structure that ensures that decisions are made that lead to long-term, sustainable value for an entity such as a corporation or, in this case, a formal collaboration between multiple organizations (Monks and Minow, 2004). Governance structures can be seen as a unique combination of specific coordination mechanisms of diverse aspects of transactions and their study enables a better understanding about the different governance structures these mechanisms make up (Martins et al., 2017). Governance mechanisms must be designed to accommodate potential conflicting goals of independent members. Therefore, the governance form concept will be investigated both as a structure and as a mechanism. An additional reason behind the adoption of this type of operationalisation is that, as suggested by Jain and Dubey (2005), it is crucial to jointly consider different governance aspects that in the previous literature have been analysed individually. In this way, it will be possible to fully capture how does governance secure specific value outcomes in given value chain contexts.

4.3. Operationalisation of Collaboration activities

To measure the collaboration level of the studied GVCs the collaboration index elaborated by Simatupang and Sridharan (2004) will be adopted. According to the authors, the collaborative level of a value chain can be measured by assessing the level of:

- *Information sharing (IS)* or the process of timely collection and dissemination of relevant and reliable information for the decision-making process of the chain actors. (Simatupang

and Sridharan, 2004). To study information sharing, as proposed by Denolf et al. (2014), this research will focus on two of its main dimensions: the ‘what’ and the ‘how’. The former indicates the content of the information shared. Three type of data contents are considered, namely, product, process and planning. Concerning the sharing mechanisms, automated, semi-automated, non-automated and face-to-face systems of information sharing will be characterised.

- *Decision synchronisation (DS)*, or the joint decision-making activities both for the long-term (planning) and the short-term (operations) strategies selection (Simatupang and Sridharan, 2004), will be investigated assessing the presence of a clearly established collective decision-making process (initiation, ratification, implementation and monitoring).
- *Incentive alignment (IA)* or the extent to which chain partners share costs, risks, and benefits among them (Simatupang and Sridharan, 2004). The presence of explicit incentive alignment schemes will be assessed. Incentives represent a driver encouraging a party to the transaction to act or to make an effort as desired by the other contracting parties. According to the TCE Theory, the incentives for a contracting party are monetary, namely, they are intended to increase one contracting party's income. Parties to a transaction utilize incentive alignment to increase their joint income (the value chain income), and none of the actors hinders the capacity of another party to raise its income (Simatupang and Sridharan, 2008).

Starting from the collaboration index proposed by Simatupang and Sridharan (2004), the construct of collaboration has been operationalised as in Table 7.

Table 7 – Collaboration Operationalisation

Collaboration	
Information sharing	<ul style="list-style-type: none"> - Type of information shared - Information quality - Information sharing mechanisms - Information sharing frequency
Decision synchronization	<ul style="list-style-type: none"> - Short-term decisions (operations) - Long-term decisions (planning) - Decision synchronisation process: <ul style="list-style-type: none"> o Initiation o Ratification o Implementation o Monitoring
Incentive alignment	<ul style="list-style-type: none"> - Type of incentive alignment scheme <ul style="list-style-type: none"> o Pay-per-effort o Pay-per-performance o Equitable incentive o Others - Level of incentive - Payment mechanisms - Incentive composition

4.4. Operationalisation of Value for partners

As the ultimate goal of every chain is to generate the highest level of value, not just for some of its actors, but for the whole value net including the final consumer (Barber, 2008) the concept of *value for partners* will be adopted within this research referring to the value created for the whole value chain partners. A value map of the studied GVC will be constructed based on the assumption according to which value is exchanged every time that a transaction takes place between different actors in a value network (Allee, 2000). Certainly, within the available literature value is conceptualised in several ways (Grönroos, 2012), value creation has been acknowledged as one of the most elusively employed constructs in the service marketing research too (Grönroos, 2012). To conclude, even if to create a value co-creation and capture operationalisation has been proved to be difficult (Grönroos, 2012), below the author propose her own operational model developed on previous studies from Allee (2000).

The nature of the co-created and captured value will be operationalised in the following three main value currencies:

- *Goods, services and revenues*, or “all transactions involving contracts and invoices, return receipt of orders, requests for proposals, confirmations, or payment. Knowledge products or services that generate revenue or are expected as part of service (such as reports or package inserts) are part of the flow of goods, services, and revenue” (Allee, 2000);
- Knowledge value, namely, “exchanges of strategic information, planning knowledge, process knowledge, technical know-how, collaborative design, policy development, etc., which flow around and support the core product and service value chain” (Allee, 2000); and

- Intangible value, or “Exchanges of value and benefits that go beyond the actual service and that are not accounted for in traditional financial measures, such as a sense of community, customer loyalty, image enhancement, or co-branding opportunities” (Allee, 2000).

As shown in Table 8, this value categorisation will be adopted both to identify the different types of value co-created and capture by the value chain actors. When joint actions undertaken by interacting chain members are observed, these are categorised as value co-creation activities. When the collaborative interactions among two or more chain actors lead to beneficial results for one or all the chain members, they will be referred to as value capture activities.

Table 8 – Value Operationalisation

	Value for partners	
	Value co-creation	Value capture
	Tangible value (i.e. premium price, increased returns, etc.)	Tangible value (i.e. premium price, increased returns, etc.)
	Knowledge value (i.e. sharing of strategic market information, planning knowledge)	Knowledge value (i.e. sharing of strategic market information, planning knowledge)
Value currency	Intangible value (i.e. increased customer loyalty, long-lasting relationships)	Intangible value (i.e. increased customer loyalty, long-lasting relationships)

5. Research Design

Hereafter, the research design selected will be discussed together with the motivation under the decisions made by the author. A description of the selected case study and the data sources used are also introduced.

Due to the exploratory nature of the research questions, a qualitative case study approach has been deemed the most suitable methodology to explain the relationships existing among the studied constructs in real-life contexts. The latter are too complex for the adoption of survey or experimental strategies, which will not enable the researcher to perform in-depth examinations (Yin, 1994). Case studies research are very useful when exploring an area where very little is known (De Vaus, 2001). Moreover, a case study design has been selected as it is particularly suitable when a complex phenomenon is taken into analysis and the aim is to achieve a full understanding of all the aspects of a specific case. Indeed, with this type of design the case under study is investigated in-depth and within its real-life context due to the research design's idiographic approach. Moreover, there are two main typologies of case study research, namely, the single and the multiple case study. Even if initially a multiple case study design was selected to reach a higher level of external validity and to build a more robust theory (De Vaus, 2001), for this research project it was only possible to conduct a single case study due to time constraints. Nonetheless, as this research builds on earlier studies about New Zealand agri-food global value chains conducted by the Agribusiness Economics Research Units of the Lincoln University (NZ) in collaboration with the Wageningen University (NL)⁵, a comparison with the findings from these earlier works will be made to increase the validity of the current results and the support to the propositions elaborated. Even if these chains were analysed in a slightly different way within that research, it is expected that for the high resemblance of the constructs taken into analysis a high degree of comparability of the results obtained is present (as further explained in Chapter 7, p. 98). To conclude, a high degree of comparability is ensured also by the adoption from Van Velzen (2016) of the same research focus. Indeed, the author analysed four different New Zealand food value chain exporting their products to The Netherlands, for which an overview is provided in the Annexes chapter.

⁵ Van Velzen, A. M. M. (2016). *Supply Chain Governance to Facilitate Market Orientation: A Multiple Case Study Research on Global Food Supply Chains*. Thesis submitted for the degree of MSc (Management, Economics and Consumers Studies), Wageningen University, 6 April.;

Saunders, C., et al. (2015) *Consumer Attitudes to New Zealand Food Product Attributes and Technology Use in Key International Markets*. Lincoln University;

Saunders, C., et al. (2016) *How Value Chains Can Share Value and Incentivise Land Use Practices: A White Paper*. Lincoln University: Agribusiness and Economics Research Unit.

Lastly, a practice-oriented approach will also be adopted. An attempt will be made in formulating potential practical implications for New Zealand agri-food global value chain practitioners on how to achieve higher level of value co-creation and capture (see Executive Summary, Recommendations for the management).

5.1. Research focus: New Zealand agri-food Industry

This research builds on earlier studies conducted by the Agribusiness and Economics Research Unit (AERU) at Lincoln University and by Van Velzen (2016) from the Wageningen University. The researchers from AERU have undertaken various studies on New Zealand agri-food industry in terms of governance and marketing activities. The same focus on New Zealand agri-food industry will be adopted within this research. Furthermore, New Zealand agri-food industry has been selected as it represents a relevant case to investigate the concepts of collaboration, governance and business environment on a global value chain level as it is further explained below.

New Zealand retains a dominant presence as an international food trader, therefore this country has been particularly influenced by the recent international changes in the agri-food industry (i.e. changing consumers' requirements, shift to chain competition, etc.), becoming a site where the effects of economic globalisation have probably developed further than in many other countries (Heron, 2003; Heron et al., 2001). In the last decades, a dramatic shift of the New Zealander agri-food system away from a state-interventionist model enabled differentiated types of reorganisation in each value chain in terms of the adopted governance form. Therefore, New Zealand has been recognised as a particularly valuable country to study contemporary governance developments in the agri-food industry (Heron, 2003). Furthermore, examples of both commodity chains still criticised as disaggregated, and examples of collaborative value chain can be observed among its agri-food GVCs (Van Velzen, 2016; Saunders et al., 2016). Therefore, this focus has been adopted as it enables to observe variation also on the construct of value chain collaboration. Moreover, the AERU research highlighted that New Zealander agri-food GVCs are still facing challenges in connecting their production systems with the needs of their international consumers (Saunders et al., 2016; Van Velzen, 2016; Roep and Wiskerke, 2012). While New Zealand exports a broad range of products, it remains reliant on exports of commodity-based products as a main source of exports receipts (Treasury, 2016; Saunders et al., 2016). This last observation proves to be essential to understand how to bridge the distance between New Zealand producers and their international costumers, as a large share of New Zealand agri-food products is exported (Saunders et al., 2016; Dalziel P., n.d.). Namely, it results to be necessary to investigate which are the value co-creation and capture opportunities that still remain unexploited by New Zealander food GVCs.

Another reason for focusing on New Zealander food GVCs is that international trades are crucial for New Zealand's economic prosperity. Exports of goods and services make up around 30% of the country's gross domestic product (GDP) (Treasury, 2016). In the export sector, the agri-food industry plays a fundamental role in New Zealand's economy. Overall, the primary sector directly accounts for around 6 per cent of real GDP and contributes just over half of New Zealand's total export earnings. Agriculture and Horticulture Agriculture directly accounts for around 4 per cent of GDP, while the processing of food, beverage and tobacco products accounts for a further 4 per cent Dairy farming is the predominant agricultural activity, followed by beef and sheep farming and horticulture (Treasury, 2016). In a global context the New Zealand beef and lamb sector is unique, it detains an export profile like no other, as more than 90 per cent of its sheep-meat and beef go overseas (Beef + Lamb New Zealand Economic Service, 2017). However, due to time and budget constraints, the focus of the current study has been further restricted to the beef sector. The latter represents the New Zealand's second-largest goods export income earner together with the sheep meat sector. These figures make the sheep and beef sector a very significant contributor of the New Zealand economy and, thus, they represent relevant sectors to be investigated (Meat Industry Association, 2016). In terms of geographical coverage, this sector utilizes around 8.3 million hectares for farming activities, namely, almost one-third of New Zealand's total land area and about 76 per cent of New Zealand's pastoral farming land. Additionally, meat farms and processing plants are spread throughout the entire country and sustain job-creation in rural communities. This confirms again a huge impact of this sector on the regional economic growth and development. To conclude, this sector is facing both opportunities and challenges. For instance, it is facing a rapid increase in the global demand for high quality protein and New Zealand has a reputation for the highest standards of food safety and integrity to be maintained. Additionally, New Zealand is also internationally recognized as one of the world's most efficient and environmental friendly ruminant livestock industries (Ministry of Agriculture and Forestry, 2009). This industry enjoys the advantages of a natural environment that is highly conducive to pastoral agriculture, an absence of major agricultural diseases, the potential for year-round production and an international reputation for excellence (Treasury, 2016). These characteristics enabled the sector to drive food export and revenue growth over recent years. Improving efficiency and effectiveness remains a key on-going priority for the processing and export sector, Saunders et al. (2016) suggested the possibility that increased collaboration could reduce operational issues of the New Zealanders meat producers (i.e. transportation costs reduction), also Van Velzen (2016) has underlined that within this sector one of the main challenge remains the lack of collaboration between the different exporters. Therefore, as one of the constructs analysed within this study is value chain

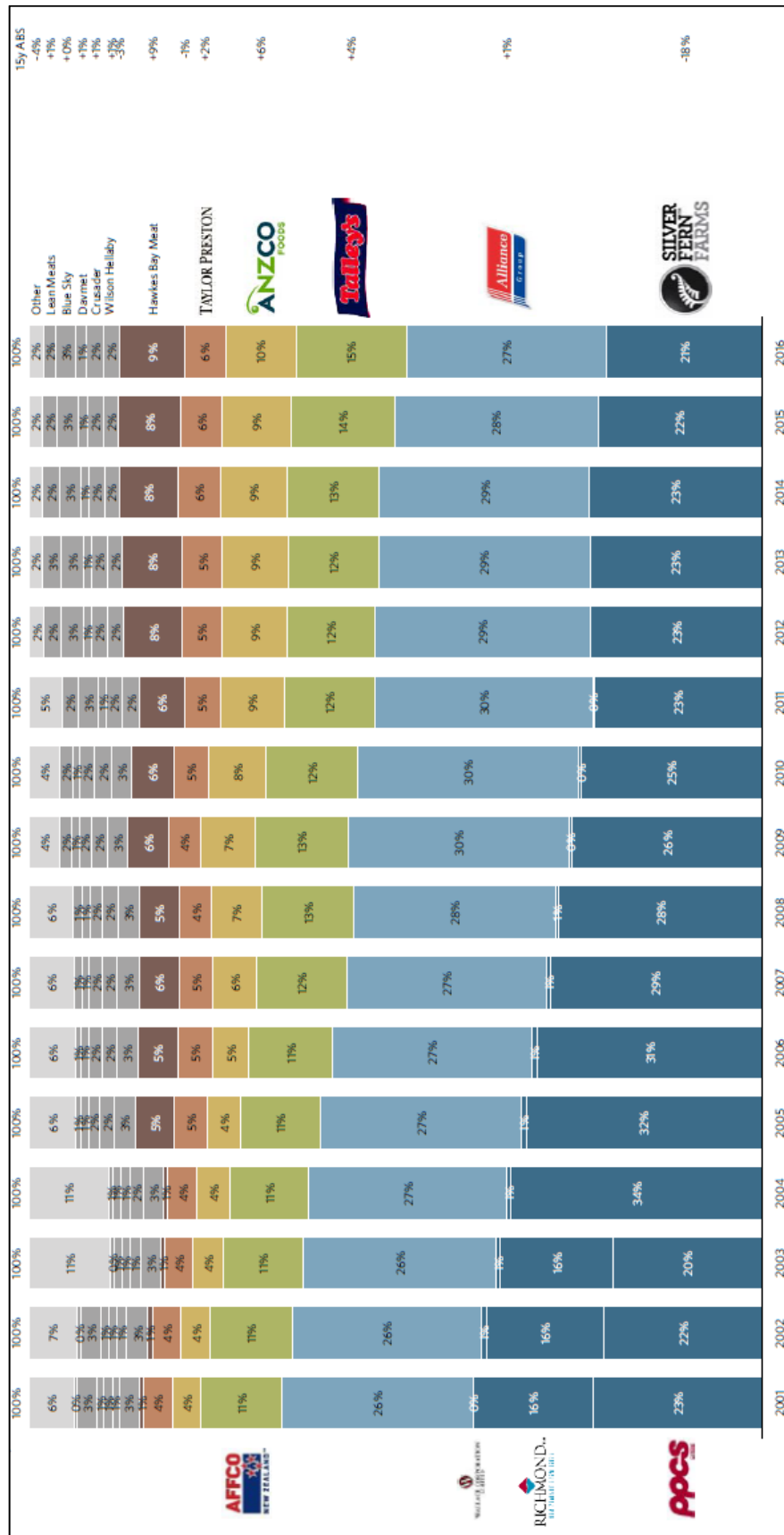
collaboration, again the selected research focus turns out to be particularly suitable to answer the addressed research question.

To conclude, it must be added that the European Union (including the United Kingdom) is the New Zealand's fourth largest destination for primary industry products, with over \$4 billion in exports in 2016. The European Union is the destination for 11.5 per cent of New Zealand's primary industries exports, with \$1.1 billion going to the UK and \$2.8 billion going to the rest of the European for the year ended March 2017 (Ministry for Primary Industry, 2017). Both for the relevance of the European and for practicality reasons, the author has decided to further restrict the research focus on a beef value chain linking New Zealand producers with the European market (Greenlea Premier Meats), which will be described in the coming section.

5.2. Introduction to the selected case study: Greenlea Premier Meats

The international value chain of Greenlea Premier Meats towards Europe has been selected both for convenience reasons and for its relevance within the beef sector. Indeed, the AERU researchers provided the author with the first contact of the Business Development Manager of the company. Moreover, the New Zealand beef sector is dominated by the presence of four big meat processing companies (ANZCO Foods, Alliance Group, AFFCO New Zealand and Silver Fern Farms) and immediately after there is Greenlea with 9 per cent of the New Zealand beef production market share (Ministry for Business Innovation & Employment, 2017) (See Figure 8). Thanks to its size, the selected processing company is currently able to address not only the domestic, but also the international market. Therefore, as the research unit of analysis is represented by global value chain, Greenlea Premier Meats was chosen because it enables the observation of a New Zealander food global value chain.

Figure 8 – New Zealand beef production market share



Source: Adjusted from Ministry of Business Innovation & Employment (2017)

Greenlea is a family owned and operated beef company, which was originally founded as a butcher shop in the 1960s in Gisborne, a town situated in the New Zealand East Coast, by Peter Egan. In 1993 Greenlea first processing plant was built on the peripheries of Hamilton and was widely admired in the press for its unique efficiency. In 1997, after the success of the Hamilton processing plant, a second plant was purchased by the company in Morrinsville. Currently, Greenlea 490 employees are still managed by the Egan family under the guidance of Tony Egan, Peter's nephew, as Managing Director. Greenlea has a revenue of \$378 million (2016), and processes over 230,000 cattle and 109,000 calves per year (Greenlea, 2017). They produce 100% grass fed and antibiotic and hormone free and their key products are represented by beef, veal, offal, plasma, serum. Greenlea is a USDA and European licensed export meat processor. Greenlea exports 90% of the meat that it produces, sending over 300 types of beef and veal products to more than 40 countries worldwide. Their principal overseas markets include the USA, Europe, Korea, Indonesia, Canada, Malaysia, and Taiwan.

5.3. Selection of Data Sources

During the conduction of this research study, both primary and secondary data were collected to obtain a complete understanding of the studied phenomenon, but also to increase the accuracy and reliability of the obtained information. Both for primary and secondary data, a retrospective approach was adopted. By collecting information from the present back to the previous 5 years, this research tried to reconstruct a clear overview of Greenlea beef value chain. In addition to this retrospective approach, information about the potential future trends were included wherever possible.

Secondary data

The available literature about the topic under study (global value chains, governance, collaboration, value co-creation and business environment) was used as the main source of secondary data for this research. Peer-reviewed databases were accessed during the literature review process. Among the others, Scopus, Google Scholar and JSTOR were consulted. The main aims of the literature review were to better focus the research problem, to find out what was already known about the research topic and eventually specify the theoretical framework. Apart from a simple search, also the snowball literature research strategy was used. Namely, the search started with some relevant publications that the author received at the start of the project from the AERU institute. The references listed in these publications led to other relevant publications.

Previous publications and reports from AERU, the studied New Zealand value chain and the New Zealand government were also retrieved as sources of secondary data.

Primary data

Semi-structured interviews were conducted with key informants that provided a second source of data for the project. To answer the research sub-questions, the researcher interviewed two main categories of respondents:

1. Researcher from the AERU research institute, as key informants about New Zealand GVC business environment, governance, collaboration and value co-creation practices due to their conduction of previous studies on these topics; and
2. Greenlea value chain actors at every chain stage, who are informed about the constructs under study, namely:
 - a. Actors closer to the end consumer have been interviewed to better understand the collaborative and the value co-creation practices with their up-stream partners (i.e. export agencies, marketing managers, sales managers, purchasing directors, customer directors, quality managers, etc.);
 - b. Actors involved in the governance practices (i.e. CEOs, senior leadership team, etc.)
 - c. Value chain managers, farmers and processors as experts on the collaboration and governance activities currently implied and their related business environment;

Semi-structured interviews were chosen for their flexibility in gaining comprehensive empirical information about the case under study and specifically about the expert's perceptions on the case. The interviews were recorded and afterwards transcribed into reports. An interview guide containing both contextual and specific questions was developed and, together with the study description, was sent to the respondents in advance by email (see Annexes, Interview Guide p.128 and Research Invitation email p.133). The protocol was used as a guidance during the interview, but the questions were tailored each time to the specific role of the respondent. Furthermore, the adoption of semi-structured interviews, rather than structured ones, enabled the researcher to change the questions' wording and to give additional explanations when necessary, but also to omit inappropriate questions for certain respondents and to include more relevant ones. The reason behind was to reach a higher interview construct validity level. To provide an example, questions about the structure and the main activities characterising Greenlea value chain were not asked to all the respondents but only to the Directors Team of Greenlea. Moreover, when farmers were interviewed concepts such as the ones of network governance, or environmental uncertainty were translated into more understandable and concrete examples. Indeed, the latter chain actors are less likely to be familiar with such theoretical concepts.

Furthermore, the list of interview questions was elaborated after the conduction of the literature review and in consultations with AERU researchers to be able to understand which aspects were the most relevant to be analysed.

The interviews were conducted face-to-face when possible, otherwise Skype calls were used. In this way, it was possible to gain a better understanding of the situation and to make sure that the interviewee understood the questions correctly. On average, all the interviews lasted sixty minutes. An overview of the interview conducted by the author is provided in Table 9.

As shown here, several data sources were used to collect relevant information. This allowed the researcher to gain a more complete overview of the studied cases and increased the ability to evaluate them from different points of view. Due to these specific decisions, it was possible to undertake the triangulation of data sources and data collection methods. In this way, the researcher was able to gain a better understanding of the cases under study and was able to cross-validate the data collected, improving the internal validity of the results of her study.

Table 9 – List of interviews

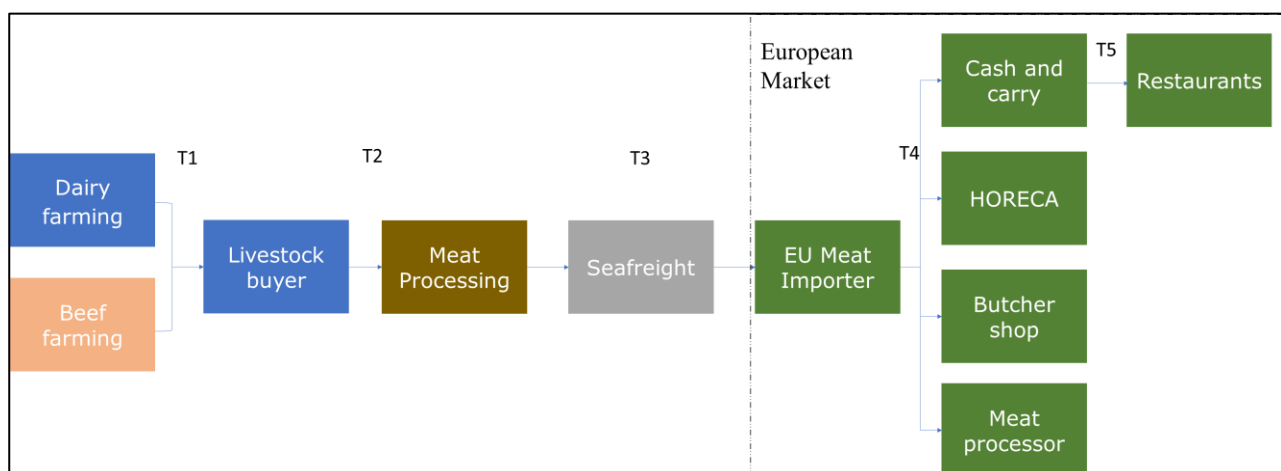
Actor	Interviewee's function	Duration of the interview	Date of the interview	Interview location	Interview number
Meat Processor (<i>Greenlea</i>)	Managing Director	1 hour	20/12/2017	Hamilton Greenlea processing plant (NZ)	1
	Sales Manager	1 hour 17 minutes	20/12/2017	Hamilton Greenlea processing plant (NZ)	2
	Livestock Buyer	1 hour	20/12/2017	Hamilton Greenlea processing plant (NZ)	3
	Business Development Manager	1 hour	20/12/2017	Hamilton Greenlea processing plant (NZ)	4
Greenlea Farmer	Beef Farmer	1 hour	19/01/2018	Skype interview	5
Greenlea Importer (<i>Schoonderwoerd Vlees</i>)	European Importer and distributor	1 hour	14/02/2018	Bilthoven (NL)	6
Greenlea Wholesaler (<i>De Kweker</i>)	Category Manager	1 hour	9/03/2018	Skype interview	7
<i>Agribusiness and Economics Research Unit</i> (AERU)	Director of AERU	2 hours	20/11/2017	Lincoln University (NZ)	8

6. Results

Within this chapter, a description of the results is provided. Specifically, this chapter is divided into five parts. First, the structure of Greenlea value chain is introduced. Secondly, the governance forms adopted in that chain are introduced. Thirdly, it follows a description of the current collaboration activities implemented among the various chain actors. Fourthly, the business environment in which Greenlea chain actors are operating is presented. Lastly, the different opinions about the value co-creation and capture processes of the different chain actors are discussed.

6.1. Greenlea Global Value Chain Mapping

Figure 9 – Simplified model of Greenlea global value chain



Source: Interview 1

The Greenlea beef value chain consists of several actors as shown in Figure 9. At the very beginning of the chain are present both dairy and beef Farmers mainly based in New Zealand North Island. These Farmers focus on raising animals that are antibiotic free, GMO-free and 100 per cent grass-fed. Additionally, they voluntarily participate to Greenlea On-farm Quality Assurance Program. According to this program, Farmers must focus on sustainability in terms of animal welfare, social responsibility and environmental responsibility. The Farmers adopting this quality scheme are expected to achieve optimal levels of pH⁶ and CL (chemical lean⁷) values in their meat. By meeting these requirements, a high consistency in terms of quality (colour, tenderness and juiciness) can be ensured. Moreover, Farmers do not interact directly with Greenlea, rather they refer to Livestock Buyers that oversee cattle procurement for the company. Livestock Buyers could be either

⁶ One of the most important quality indicator for meat is its pH value as it affects the meat colour, drip loss, and eating quality traits (i.e. tenderness). As the pH level decreases under its ideal range (e.g. 5.7 to 6.0 for the highest meat quality), meat becomes increasingly pale, soft and higher in drip loss (Kerry, 2009).

⁷ Chemical lea (CL) is defined as the amount of lean red meat compared to the amount of fat in a sample of meat.

commissioned, employed by Greenlea or employed by third party agencies (Interview with the Business Development Manager).

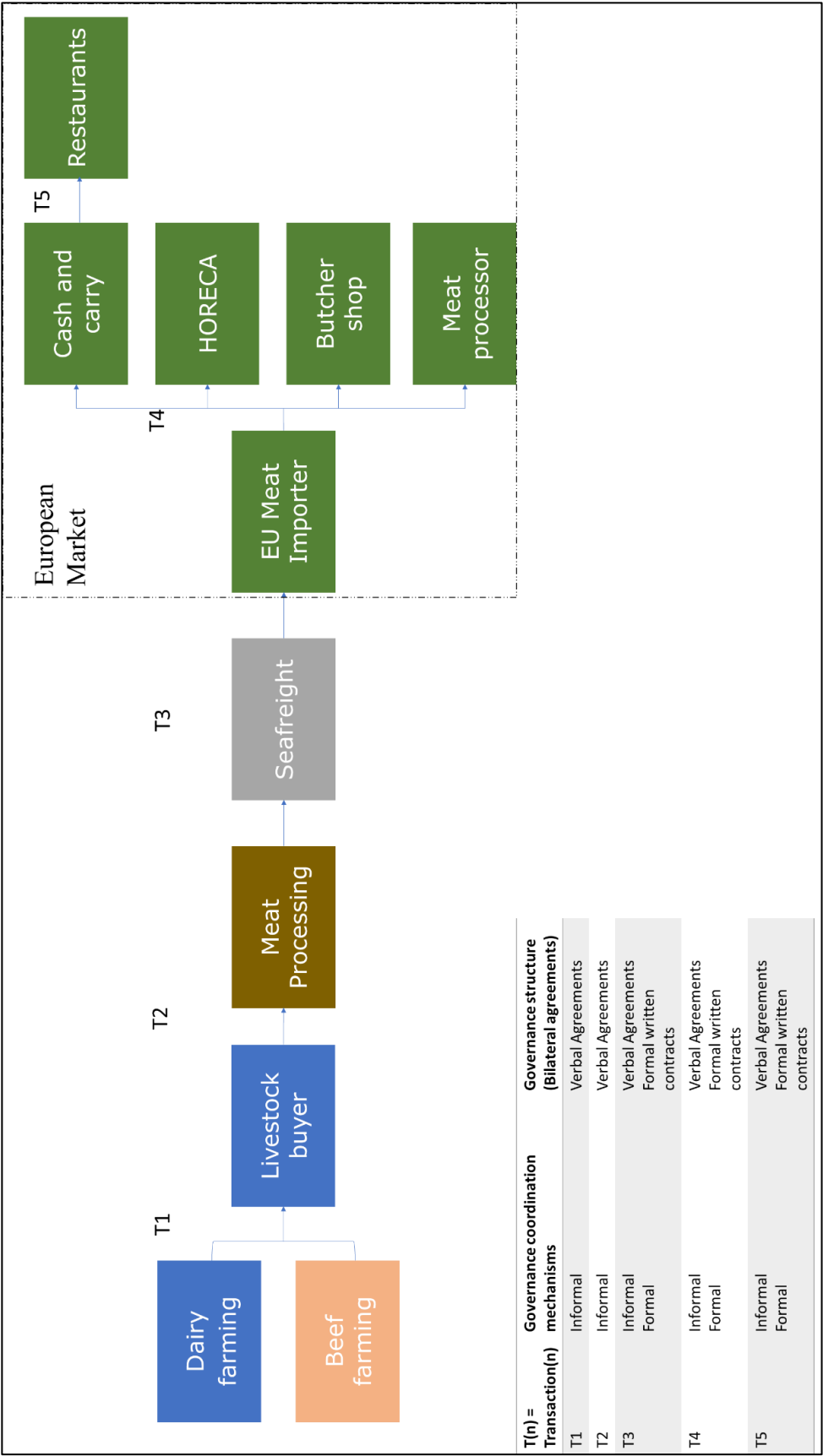
Downstream in the chain, Greenlea represents a beef processing company and is responsible both for the meat processing, packaging and exporting. Greenlea products are sold both in the domestic market and outside of New Zealand. Greenlea meat is exported in the European market through the collaboration of Greenlea with Schoonderwoerd Vlees (Interview with the Business Development Manager). Schoonderwoerd Vlees represents the only European Importer and distributor of Greenlea products, it is a family-based company specialized in sales and distribution of New Zealand and Australian meat products. Since Greenlea high-quality meat products represent a niche product, Schoonderwoerd Vlees is responsible to distribute it to higher-end butcher shops, cash and carry stores (i.e. Metro, Macro, etc.), HORECA, processing companies and ship stores. From the one side, butcher shops, cash and carry and HORECA tend to buy more chilled products and in lower order quantity if compared to the other buyer categories. From the other side, ship stores and processing industries buy more frozen products in bulk quantity. All Schoonderwoerd Vlees buyers are operating within Europe (Interview with Schoonderwoerd Vlees).

Among Schoonderwoerd Vlees buyers, the Dutch wholesaling company called De Kweker has been interviewed to further investigate the relationship between Greenlea's Importer and its direct clients, and between the wholesaler and his customers. De Kweker is based in Amsterdam where they resell to two main clients' categories, local restaurants and independent stores situated in The Netherlands.

6.2. Greenlea Global Value Chain Governance

In this section, the governance forms implemented at the various stages of Greenlea value chain are described as it emerged from the interviews.

Figure 10 – Greenlea value chain governance forms



Source: Interviews 1-7

6.2.1. Governance as structure: Network governance

By analysing Greenlea value chain as a whole, it could be observed that no one of its actors detains a leadership role over the others. Additionally, there is not an established network administrative organisation (Interviews 1, 4 and 6). Greenlea value chain can be described as a shared governed network as most of its actors are involved in the governance of the network, which results to be a decentralized network. This last is characterized by the presence of few actors with an almost symmetrical distribution of power, and among which a high level of trust is spread. However, regular meetings are organised to coordinate mostly bilateral relationship (i.e. Farmers-processor; processor-Importer; etc.), and not to come together with all the different representatives of the entire network (Provan and Kenis, 2008). Therefore, even if shared governance seems to be the governance structure more similar to the one adopted by the analysed network, Greenlea value chain does not exactly fall in any one of the three network governance structures as they are described by Provan and Kenis (2008). According to the interviews respondents (Interviews 2, 4, 6 and 7), Greenlea value chain can be rather described as a still disjointed value chain, which need to better define its governance form and its collaborative goals. In fact, according to Greenlea Livestock Buyer: *“From the Farmers to the final consumers all those people need to start to understand that we are food producers and the consumers has to understand that he has to take a role there in understanding their role and if he wants to have value then everybody need to be part of creating this value, it is needed a better understanding from all of these people about all of those people. The obstacle of increasing that knowledge, of embracing and sharing that knowledge is also the biggest opportunities. Because if we do then everybody is going to share an increased level of value”* (Interview 3). Nonetheless, something could be added about the power distribution along the chain and its effect on trust and commitment. All the interviewed chain actors agreed that the power distribution among them does not present relevant asymmetries as the power distribution in the chain is strongly dependent from the industry seasonality (Interview 4). Power within Greenlea value chain, as well as in the meat industry at large, moves up and down the chain according to several factors. From the one side, Greenlea detains the power during the season’s peak as the industry processing capacity is typically limited and Farmers are in urgent need to kill their animals because of the reduced pasture stocks. From the other side, Farmers hold the power during the season off-peak (winter and early spring). Usually, in the food industry, market power seems to lie in the hands of retailers (Elg, 2008) because of their proximity to the end consumer. However, due to the limited size of the European supermarkets that sell Greenlea products they do not detain a much higher level of power compared to the other chain actors. Though, usually they do add higher margins to the products they sell even if they do not control the chain. To conclude, due to the low power imbalance along the chain, the level of trust and

commitment among the chain members is quite high and the actors do not feel the necessity to adopt a strong formal contractual process to coordinate their actions and decisions (Interviews 1 and 6). The coordination among the various actors' operation assumes predominantly an informal character, where if formal contracts are signed they are however applied quite flexibly (Interviews 6 and 7).

Concerning the observed level of network collaboration, both the Greenlea Business Development Manager and the Livestock Buyer affirmed that a better formalised network governance would improve the collaboration among all the actors to jointly create and capture an increased level of value. Indeed, the information sharing process along the network seems to be interrupted at two main stages in the chain, namely, at the interaction level between the Farmers and Greenlea and between the European wholesalers and Greenlea (Interviews 3, 5 and 7). According to one of Greenlea Farmers: *"More information must come back to the Farmers about the consumers, because now we are obliged to guess what to do to increase the value of our operations or to just stay what we have always done"* (Interview 5). The De Kweker Category Manager also affirmed that there is no information sharing going on between them and Greenlea as well as with the end customers, which leads to a lack of transparency and awareness of each other operations in the chain (Interview 7). The same respondent was also convinced that through a higher level of information sharing new value co-creation opportunities could be exploited, such as a higher diversification of the product range offered by Greenlea. Indeed, De Kweker currently buys from the New Zealander processing company only seven different types of products that are further processed by them. Furthermore, through an increased level of information sharing he suggested that more opportunities to increase the product value could be co-created (i.e. backward tracing of individual pieces of meat to the Farmer) (Interview 7).

6.2.2. Governance as structure: Bilateral agreements

As shown in Figure 10, the governance structure adopted to organize the relationships between Farmers and Greenlea is represented by verbal agreements (Interviews 1,3 and 4). These verbal agreements are made by the Farmers not directly with the meat processing company, but with a Livestock Buyer. Together with the Livestock Buyer, the Farmers agree on the volume (namely, the number of animals) that will be supplied and the period on which it will be supplied. Indeed, Farmers are not obliged by Greenlea to supply all their cattle just to them. Concerning the price, the latter many times is not discussed between the Farmer and the Livestock Buyer. The 85/90% of the meat processed by Greenlea comes unpriced (Interview 1). The price to be paid to the Farmers is decided weekly by Greenlea according to its analysis of the market movements. However, Greenlea tries to be as consistent as possible in keeping its prices up for all the Farmers supplying to them.

Concerning the quality, Farmers can decide to adhere to the so-called *Greenlea On-Farm Quality Assurance Program*. Participating in these programs Greenlea prime cattle suppliers can obtain a label certifying that their beef as ‘Not Fed Antibiotics’, ‘Not Fed GMO’ and ‘Hormone Free’ (Interview 3).

Proceeding to the next stage of the value chain, it can be seen from Figure 10, that the transaction among Greenlea and their European exporter (Schoonderwoerd Vlees) are organized both through verbal agreement and formal written contracts. Indeed, Schoonderwoerd Vlees once every month contact Greenlea to order their products with three months of advance. The Greenlea European Importer submits its order to Greenlea by email and, once the order has been accepted by the meat processing company, it is translated in a formal written contract among the two value chain actors (Interview 6). Therefore, what is firstly discussed by emails (verbal agreements), is then written down in a formal contract. Within this contract both the price, the volume the product specifications and the expected delivery date are stated. Usually, quality is not discussed within these contracts as it is assumed that the transacted products satisfy the desired level of quality specifications (Interview 6). Moreover, the transaction among the Importer and the processor are organized according to the CIF model (Cost, Insurance and Freight⁸)

Lastly, further down in the chain it takes place the interaction among the European Importer and its direct buyers. The governance of the relationships among these actors is structured in spot-market relationships (Interviews 6 and 7). According to the Managing Director of Schoonderwoerd Vlees (Interview 6), the relationship among them and their clients is very focused on price, as the high and constant quality level of Greenlea products is taken for granted.

6.2.3. Governance as mechanisms: Formal and Informal mechanisms

Figure 10 shows that throughout the entire value chain informal governance mechanisms prevail on the formal ones. Indeed, the main mechanism of coordination adopted among the Farmers and Greenlea are informal. Namely, they are based on trust and commitment, rather than on control (Interviews 3 and 5). Farmers commit part of their livestock to Greenlea as they trust that this company will not take advantage of its position and behave fairly towards them (Interview 5). The type of trust linking these two chain actors is mainly trust in integrity, as it is based on the longevity

⁸ “Cost, Insurance and Freight means that the seller delivers the goods on board the vessel. The seller must contract for and pay the costs and freight necessary to bring the goods to the named port of destination. The seller also contracts for insurance cover against the buyer’s risk of loss of or damage to the goods during the carriage. The buyer should note that under CIF the seller is required to obtain insurance only on minimum cover. If the buyer wishes to have more insurance protection, it will need either to agree as much expressly with the seller or to make its own extra insurance arrangements.” (Adapted from the ICC, 2018)

of the interpersonal relationships established among the Farmer and the Livestock Buyer, which is characterized by loyalty, consistency and fairness (Interviews 3 and 5). Indeed, Farmers are not dealing directly with Greenlea, but with the Livestock Buyer s working for the processing company. It is exactly the relationship between the Farmers and the Livestock Buyer that is key in ensuring to Greenlea a solid and wide supply base. This relation is founded only on informal governance mechanisms, where the sustainability of the cooperation is based uniquely on trust. According to the interviewed Livestock Buyer (Interview 3), in New Zealand there is an historical lack of trust about contractual agreements for buying and selling cattle. When buying cattle, Livestock Buyers focus on the establishment of a good personal relation with the Farmers, rather than on the formulation of detailed contractual agreements as these last are perceived as too risky for the high uncertainty characterizing the beef sector. They aim at developing good understanding of the individual Farmer's needs as the starting point for long-term loyalty (Interviews 3 and 1). The level of trust in integrity nourished by the Farmers towards the Livestock Buyers, and in turn towards Greenlea, is based on the conviction that these two chain actors will always use their higher market knowledge to act in the interests of the whole chain.

Analyzing the relationship between Greenlea and Schoonderwoerd Vlees, also in that case the informal mechanisms of coordination are those deemed most relevant in the governance of the transactions between the two actors. Both, Greenlea Sales Manager and the Managing Director of Schoonderwoerd Vlees affirmed that even if formal contracts are present, what really matters in the coordination of their operations is to maintain and to continue to build a solid trust basis between them (Interviews 3 and 6). Between these two chain actors, all the different forms of trust previously analyzed within the literature review can be observed. Calculative trust is present, as both parties believe that the advantages deriving from the sustainment of their relationship outnumber the costs. Indeed, Schoonderwoerd Vlees represent the only European Importer of Greenlea, which in turn is regarded as the best New Zealand supplier of Schoonderwoerd Vlees (Interviews 3 and 6). Competence trust links the two chain actors, which have developed the skills needed to perform their relative tasks in the value chain (Interview 6). Trust in integrity can be also observed, as Schoonderwoerd Vlees said: "If we make a contract it is always 100 per cent fulfilled, it is always there" (Interview 6). Trust in predictability is also experienced by Greenlea and Schoonderwoerd Vlees, as even without any formal written contracts the two parties have learned each other's way of working and are able to anticipate each other behaviors (Interviews 3 and 6). For instance, the Managing Director of Schoonderwoerd Vlees said: "Even though I have no booked products for May or June, they know that if they kill cattle in June we will take that" (Interview 6).

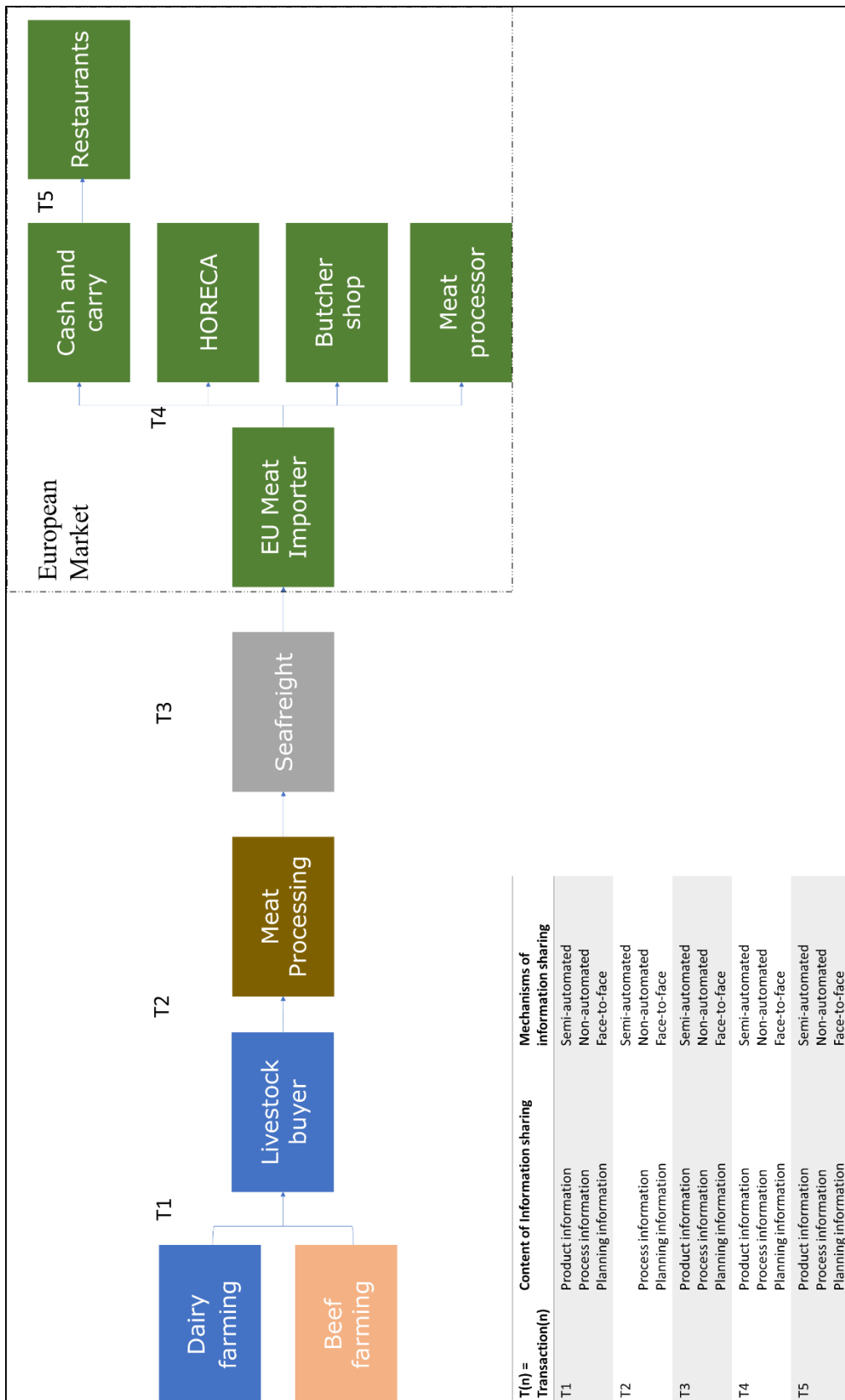
To conclude, if between Greenlea and Schoonderwoerd Vlees the accent is on informal governance mechanisms, between Schoonderwoerd Vlees and their direct buyers a more formalized type of coordination is adopted through the drafting of formal written contracts (Interview 6). Every time that a transaction is made, the same is registered on a digital system that automatically creates a contract. These contracts specify mainly the required product characteristics in terms of volume, cuts, the expected delivery date and the contracted price (Interviews 6 and 7). However, also informal governance mechanisms are relevant in maintaining an effective and lasting relation among these actors through the establishment of trust in integrity and competence trust (Interview 6). Even if the Importer's clients are not fully committed to Schoonderwoerd Vlees products for their supply, they trust the ability of this chain actor in providing them with a consistent and high-quality meat. Moreover, they trust the integrity of Schoonderwoerd Vlees in fulfilling their written and oral promises (Interviews 6 and 7).

6.3. Greenlea Global Value Chain Collaboration

In this section, the collaboration activities implemented among Greenlea value chain actors are outlined.

6.3.1. Information Sharing

Figure 11 – Information sharing process



Source: Interview 1-7

All the chain actors interviewed emphasized the high relevance of information sharing as the main form of collaboration implemented among them. However, differences both in the mechanisms of information sharing and in the type of information shared emerged to be present at the different stages of the chain. Moreover, different opinions about the current effectiveness of the information sharing activities have been recorded (Interviews 1-7).

Table 10 – Information sharing mechanisms and content [✓ = adopted]

Chain stage	<i>Farmer – Livestock Buyer /Greenlea</i>	<i>Livestock Buyer - Greenlea</i>	<i>Greenlea - Schoonderwoerd Vlees</i>	<i>Schoonderwoerd Vlees - De Kweker</i>	<i>De Kweker - Final consumers</i>
	<i>Information sharing mechanisms</i>				
Website	✓		✓	✓	✓
Mobile application	✓				
Monthly news-letter	✓				
Face-to-face communication	✓	✓	✓		✓
E-mails	✓	✓	✓	✓	
Phone calls		✓	✓	✓	
Field dates	✓				
	<i>Content of information shared</i>				
Product information	Slaughter reports Invoice		Cuts required Quality Volume Price	Cuts required Volume Price	
Process information	Slaughter kill capacity Cattle transaction history	Amount of cattle needed	Delivery date	Delivery date	
Planning information	Updates on the Greenlea achievements Regional market news	Period in which to kill the cattle Cattle replenishment	New Zealand weather conditions Regional demand trends	New Zealand weather conditions Regional demand trends	
	<i>Frequency of information sharing</i>				
Daily				✓	✓
Weekly	✓	✓		✓	
Monthly			✓	✓	
Annually				✓	

Table 10 provides an overview of the results obtained for the content, mechanisms and frequency of the information sharing activities characterizing Greenlea value chain. Hereafter, these results are further discussed.

Firstly, information is shared among the Farmers and Greenlea and, according to Greenlea Managing Director (Interview 1), their company undertake a huge effort to keep creating a valuable information flow from them back to the Farmers. The mechanisms adopted to share information are several, as also the type of information shared that covers both product, process and planning information (See Table 9). However, face-to-face communication between Farmers and Livestock Buyers is the information sharing mechanisms used more frequently to maintain an indirect information flow between the Farmers and the processing company. As highlighted by Interviews 1, 3 and 5, Farmers prefer a regular one-to-one connection with the Livestock Buyer over a more impersonal way of communication through emails, mobile applications and similar. The main channel of information sharing at this stage in the value chain is represented by face-to-face communication, even if also phone calls and emails are used. Concerning the content of information shared among these two actors, data about market trends and Greenlea operations are exchanged with the Farmers. The frequency of information sharing activities varies on Farmers' personal needs basis and it could be either weekly or monthly. What really matters in the effectiveness of information sharing are the personal communication skills of the Livestock Buyer.

At the interaction level among Livestock Buyers and Greenlea, information is shared mainly through phone calls, emails and face-to-face communication. The content of the information shared are mainly product and planning information (Interview 3). Namely, Greenlea is used to specifies to its Livestock Buyers the amount and the type of cattle needed to be processed (product information). Concerning the shared planning information, this is mostly about the preferred period for Greenlea in which to kill the cattle. Moreover, Greenlea shares information with the Livestock Buyers about the availability of cattle replenishment to be provided to the farmers (Interview 3). To conclude, these two chain actors are used to share information between them on a weekly basis (Interview 3).

Further down in the value chain, information between Greenlea and Schoonderwoerd Vlees are shared mainly by e-mails that can be considered "the new formal way of communication" with respect to the phone calls, which in the past were mainly used together with fax and that today are considered too risky (Interview 2). Furthermore, both Greenlea and Schoonderwoerd Vlees try to visit each

other's plants at least once a year. The intention behind is to sustain a close collaboration by keeping learning the way of working of each other and by getting updated about every change occurred. Therefore, through face-to-face communication during the personal visits process and planning information are mainly exchanged. From the one side, process information usually includes updates about the new actions undertaken both by Schoonderwoerd Vlees and by their clients. From the other side, planning information is about market trends and regional price developments. Concerning product information, they are primarily exchanged by e-mails and phone calls. The latter is usually about the transacted volume of meat and its price, as the high and consistent quality level of all the items exchanged is usually never representing an issue. To conclude, product information represents the first category of information shared by volume (Interviews 2 and 6).

De Kweker does not have in place any type of information sharing activities directly with Greenlea, each information received by the wholesaler is always received through the intermediation of the European Importer (Interview 7). Information flows from Schoonderwoerd Vlees to De Kweker mainly through e-mails and phones calls, as in the previous chain stage. However, three times per year the Importer organizes, together with De Kweker, personal meetings to discuss together issues mainly related to the available promotional budget and the amelioration of the products assortment. With this information sharing mechanisms, product information concerning predominantly order information are shared. Indeed, also in the case of Schoonderwoerd Vlees's clients quality is not discussed because Greenlea products are recognized as always being of a high-quality level. Moreover, the two actors exchange information about the prices movements trends, New Zealand weather conditions, supply conditions and lastly about the history behind the purchased items (animal welfare, environmental footprint, etc.).

The information sharing process between De Kweker and its buyers is not well developed. According to Interview 7, just few information about the product characteristics (i.e. New Zealand origin, constant quality, meat from grass-fed animals) and price are shared mainly through phone calls and face-to-face communication. On the website of the company, information about the available product are shared (i.e. cut type, average weight, product origin). Information is shared also about the logistical needs of the customers, who have access to an account manager as fixed contact person with which they can discuss their needs and requirements both through phone, emails and personally (the account manager visit the clients one per month).

To conclude, there is not a mechanism of information sharing connecting the Farmers and Greenlea directly to the final consumers, neither through the Importer nor through the wholesaler (Interviews

2, 6 and 7). Moreover, also the interviewed manager from De Kweker lamented a lack of solid information sharing between them and their clients. Even though the wholesaler knows his customer and what they are buying, they do not know exactly what they are doing and planning to do (Interview 7).

6.3.2. Decision Synchronization

Decision synchronization activities resulted to be really poor throughout the entire chain. Each actor tends to focus on his own tasks and responsibilities and to decide by himself how to implement his individual strategy (Interviews 2,3 and 6).

Concerning the Farmer-processor relationships, a low level of decision synchronization has been observed. A formal process of decision synchronization, distinguishes by the initiation, ratification, implementation and monitoring phases, is not present (Interview 3). However, the interviewed Livestock Buyer (Interview 3) explained that “there are several moments along the year where cattle supply is far away from Greenlea processing capacity”. In these occasions, an informal synchronization of the decision about when to finish the animals is done. However, this type of decision is always made on an individual basis, rather than on a collective one. Moreover, this process is always short-term oriented (around 60 days) (Interview 3). According to the interviewed Farmer, decisions are not synchronized with the processing company. Contrarily, he lamented a lack of involvement of Farmers in the chain decision-making process (Interview 5).

When observing the relationship between Greenlea and Schoonderwoerd Vlees, a lack of decision synchronization both in the short and in the long term can be registered. For instance, according to both Greenlea’s Sales Manager and the Managing Director of Schoonderwoerd Vlees (Interviews 2 and 6), decisions are about the short-term planning of prices are quite one-directional. The price decision is initiated by Greenlea Sales Manager that propose a specific price to Schoonderwoerd Vlees. This offer is commonly always accepted without any further discussion by the Importer, who pays the established price one week after the departure of the vessel containing the products ordered. Moreover, once the product has been received, even if there some minor issues in terms of quality or volume, the price decision that has been made tend not to be ratified (Interview 6).

Schoonderwoerd Vlees and De Kweker do not go through any form of decision synchronization, neither in the short-term nor in the long-term (Interview 6). Indeed, the European Importer autonomously decide on the quantity that needs to be ordered of each product type for each one of the served markets according to his own forecasts. This makes the business difficult, as each order is placed to Greenlea three month in advanced and if the ordered quantity of meat items does not match the actual demand some losses could be incurred by Schoonderwoerd Vlees (Interview 6). Decisions

are not synchronized neither for the long-term strategy to be adopted collectively by Schoonderwoerd Vlees and De Kweker. However, from Interview 7 it emerged that a certain degree of decision synchronization for the short-term operations is present. Indeed, Schoonderwoerd Vlees and De Kweker usually decide together their strategy for the promotional activities to be implemented and for the product assortment modification. This decision synchronization process is undertaken every three months as promotion usually lasts for a trimester.

The interviewed manager from De Kweker affirmed that a certain degree of decision synchronization is undertaken together with its clients. Indeed, the wholesaler decides together with the customers how to organize the logistic path of its trucks according to the individual delivery requirements of the clients. Together they discuss their needs and capabilities to reach logistical efficiency.

6.3.3. Incentive Alignment

As in the case of decision synchronization, the alignment of incentives resulted to be really poor throughout the entire chain. Each actor tends to focus on his own individual risks and benefits, rather than sharing them with the other chain actors (Interviews 2,3 and 6).

Firstly, Greenlea do not implement any type of incentive alignment system with their Farmers. The reason behind, according to the Livestock Buyer and the Managing Director (Interviews 1, 5 and 3) is the conviction that the wide supply basis possessed by Greenlea is sufficient to satisfy their needs. Moreover, “by offering incentives to some you are going to upset others because Farmers talk and this is not something that you want to get into” (Interview 3). Therefore, price incentive around supply numbers or for supplying at different times are very rare, and when they do happen they are designed “in a specific form, for a specific reason, to fulfill a specific need in a specific time” (Interview 3).

Secondly, also Greenlea and Schoonderwoerd Vlees do not have any incentive alignment schemes in place (Interviews 2 and 6). As explained by Schoonderwoerd Vlees Managing Director: “Once the product is shipped, everything is at our risk. Greenlea fulfills their order, they ship the volume as agreed, they ship in time. Once the container is gone all the risk is here, it could be very stressful sometimes.” (Interview 6). An example is represented by the situation in which sometimes in winter New Zealand production goes slower and Schoonderwoerd Vlees might get just the 80 per cent of the volume ordered. In that case, the risks related to the described situation are all faced by the Importer alone that can either decide to slower its business down or to play a little bit with the price (Interview 6).

Thirdly, Schoonderwoerd Vlees and De Kweker do not adopt any incentive alignment schemes neither (Interviews 6 and 7). Lastly, De Kweker do not adopt any sort of incentive alignment scheme with their clients (Interview 7). However, they sometimes try to retain their customers by offering

them instead of a monetary incentive a higher and more customized logistical service or further product processing according to their specific requirements (i.e. the clients can call them till 11 pm and get delivered the next morning). Moreover, they usually offer to their clients special freezers for free, or they may also offer some sorts of loan to them. The logic behind this behavior is to motivate their clients to keep buying from them and to keep ordering the same or increased product quantities (Interview 7).

6.4. Greenlea Business Environment

In this section, the levels of environmental and behavioral uncertainty characterizing Greenlea value chain business environment are outlined according to the different actors' perspective and summarised in Table 11.

Table 11 – Main sources of business uncertainty according to the different chain actors (n.a. = not applicable)

	<i>Farmers</i>	<i>Greenlea</i>	<i>Schoonderwoerd Vlees</i>	<i>De Kweker</i>
<i>Environmental Uncertainty</i>	Seasonality of supply Weather instability Market livestock price fluctuations Changing technology Changing customer's needs	Highly competitive industry Seasonality of supply Overcapacity Regulatory risks Market barrier (EU quota) Compliance with hygiene and quality standards Changing customer's needs Market livestock price fluctuations Foreign exchange rate Land use change	Weather instability Demand instability Import duty	Import tariff Demand increase from China, Decreased meat consumption in Europe
<i>Behavioural Uncertainty</i>	n.a.	Farmers potential switch to other processors	Buyers potential switch to other Importers	n.a.

Source: Interview 1-7

6.4.1. Environmental uncertainty

Different sources of environmental uncertainty have been recognized through the Interviews with the value chain actors. Among them the main are discussed above.

According to the Farmers (Interview 5), the main sources of environmental uncertainty are:

- *Seasonality of supply*: Even though the relatively benign climate characterizing New Zealand is associated with quite stable production levels between years, changes in land use are a

source of tension for the beef Farmers. Indeed, if beef Farmers are not receiving the expected price for their cattle by the processing industry, they will tend to convert their land to another use. Moreover, the seasonality of pasture production and cows reproduction corresponds to a seasonal supply of beef available. This situation creates further tension between the Farmers and the processing companies when trying to balance supply and demand. Moreover, the uncertainty level coming from this issue is increasing because the demand for chilled meat products is augmenting as well, and chilled products are typically supplied on a whole-year basis (Interview 5).

- *Weather instability*: The variations in weather conditions strongly affect the pasture supply in New Zealand. This, in turn, impact the beef production system that is based on the pasture availability. Moreover, the weather instability not only impacts the volume of the available supply, but also its quality. The weight and fat cover characteristics of the cattle largely depend on how well the animals have been fed.
- *Market livestock price fluctuations*: Livestock prices are heavily affected by the changing power distribution between Farmers and processors during the year. Indeed, the fluctuations in the feed supply, the availability of killing space and the beef demand to utilise capacity or meet customers order are among the main determinants of the Farmer-processors power distribution. From the one side, if Farmers dispose of a sufficient pasture supply to keep growing their animals, they will prefer not to kill their cattle at the times required by the processors, but to grow them to higher weights. This situation pushes processing companies to increase the price offered to Farmers to be able to secure for themselves a suitable supply. The same mechanisms can be observed when processors make commitments to deliver a specific breed of beef at specific times to their customers. From the other side, when Farmers' feed stocks decrease and, thus, there is a high demand for killing capacity, processors found themselves in a more powerful position if compared to Farmers. Consequently, processors tend to reduce the prices offered to Farmers. To conclude, because of the high competition for cattle supply processing companies tend to transmit the market prices and exchange rates fluctuations to Farmers. Subsequently, big changes in the price paid to Farmers can be registered. To face price volatility, Farmers strive to match their operations with the unstable weather conditions and to increase the efficiency of their farms. However, this causes a reduced alignment to customers' requirements and consumers' demand.
- *Changing technology*: New Zealand beef Farmers enjoy two main comparative advantages that enable them to produce beef products which meet the market specifications of their exporting countries. Firstly, the quite benign weather typical of New Zealand enables them

to maintain constant quality and production levels. Additionally, their isolated location enables them to operate in an almost disease-free farming area. However, when coming to the adoption of new technologies (i.e. mainly genetic engineering) that could further increase farm productivity, they have been quite resistant as they prefer to keep farming traditionally. Moreover, Farmers lament a lack of industry and market information made available from the processors to guide them in the right direction of change. Those Farmers that would be open to the adoption of new technologies found themselves in an information vacuum about how to invest their time and money to change their operation. More investments for the adoption of more advanced farm technologies are needed to further optimize farm operations and to match them to customer requirements even more.

- *Changing customer's needs*: In general, consumers' perception of New Zealand beef sector on an environmental level has always been good. However, the increased awareness of consumers about global environmental issues represents a huge threat for New Zealand Farmers. They should try to further reduce their gas emissions and to improve their effort to protect the water quality and cleanness. Consumers want to know more about the sustainability of farming practices, the animal welfare situation, the product origin, and so on. Moreover, a shift towards alternative protein sources have been registered and those consumers that will keep buying meat will opt for high-quality goods.
- *Land use change*: New Zealand primary industry is dominated by the dairy sector. The higher prices that could be obtained by growing milking cows push Farmers to convert their business to this type of production. Over time, this trend has limited the cattle supply available for the meat sector and for the beef segment in particular. Furthermore, many times the carcass available are those of old milking cows. This has diminished the availability throughout the entire year of high-quality supply. If a common strategy for the Meat and Dairy sectors is not established, the situation will continue to worsen, and increased competition and instability levels will be faced by New Zealand Meat sector.

According to Greenlea Managing Director, Business Development Manager and Sales Manager (Interviews 1, 2 and 4), additional sources of environmental uncertainty with respect to those recognized by the Farmers are:

- *Highly competitive industry*: New Zealand meat producers are facing not just a high level of domestic competition, but also a severe rivalry from their global competitors. Australia, Ireland and South-America meat processors export high-quality products in Europe as well.

- *Overcapacity*: Because of the seasonality of the cattle supply, the processing company could suffer from excess capacity. This implies high level of competition among the processing companies that want to ensure for themselves a proper carcass volume to cover the high fixed costs of their production plants. This could also imply an increase in the prices.
- *Regulatory risks*: Due to the relevance of food safety and quality, several regulations exist aiming at reducing food contamination threats both at the national and international levels. Examples are represented by the Codex Alimentarius on a global level, while on a regional level the European has introduced legislation such as the General Food Law, an example at the New Zealand national level can be found in legislations such as the Food Act of the 1981, which govern food safety. The presence of so many regulations, often contradicting among them and across markets, means that food processors are exposed to the risk of non-compliance and loss of market access.
- *Market barrier (EU quota)*: Annually, 1,300 tonnes of New Zealand high-quality beef can be exported to the European Union, which are subjected to a 20 per cent ad valorem duty. The quota allocation is directly managed by the New Zealand Meat Board before the beginning of each Quota Year (which goes from the first of July to the thirtieth of June) and is made according to the production history of the companies over the previous three years. Based on this allocation mechanism, the largest quotas are in the hands of the three largest New Zealand processing companies⁹. If the export to Europe exceed the allowed volume, an out-of-quota tariff is also imposed to the products under the European supervision.
- *Compliance with hygiene and quality standards*: Over the last years, processing companies have adopted different strategies and practices to ensure constant quality and hygiene levels in their products (i.e. Greenlea on-farm quality assurance programme). The processing companies employ sophisticated livestock cleaning technologies to clean animals upon arrival at the processing plant. Processors have also invested heavily in meeting stringent hygiene requirements. To improve the quality of product supplied to customers, companies have invested in accelerated conditioning and aging to deliver products with consistent tenderness, that are healthy with a high level of overall quality. However, to respond to stricter and stricter customer and legislative requirements on food quality and hygiene, a continuous effort in terms of time and money has to be made by the processing companies. This is

⁹ According to the New Zealand Meat Board website (Nzmeatboard.org, 2018), Greenlea Premier Meat Limited has access to a quota of 88.1 tonnes for the Quota Year 2017/18. The largest three quotas are detained by Silver Fern Farms Limited, Affco New Zealand Limited and Wilson Hellaby Limited, respectively with 404.7, 213 and 201.7 tonnes.

especially true for the European market, which has not only very high requirements, but that is also reached by the vessels transporting the products after a one-month sea trip.

- *Foreign exchange rate*: New Zealand has to deal with a quite high volatility in its currency strengths. As most of the beef meat produced is exported outside the country, this currency volatility is reflected in the prices that could be paid to the Farmers and in the profit that could be made from the exports.

In the Schoonderwoerd Vlees's Managing Director (Interview 6), two additional sources of environmental uncertainty affect their business and consequently the entire value chain. Namely:

- *Demand instability*: The volatility of the demand and its variability across the different markets force the Importer to deal with a high level of environmental uncertainty. Indeed, he has to order from New Zealand a specific product volume three months ahead according to his forecast.
- *Import duty*: A 20 per cent ad valorem duty is imposed on the meat products entering the European Union on top of the price paid by the Importer to Greenlea. This makes the business difficult, especially in periods characterized by higher price levels.

Lastly, according to De Kweker (Interview 7) two extra environmental uncertainty components were identified in:

- *Increased meat demand from China*: Chinese consumers are increasing the quantity of meat in their diets as they become more wealthy. The interviewed manager from De Kweker saw in this market trend a potential risk of price increase for the meat exported from New Zealand to Europe. Another potential consequence of the augmented meat demand from China could also result in a lower quantity of meat available for the European market (Interview 7).
- *Decreased meat consumption in Europe*: Within Europe consumers are becoming increasingly aware of the high environmental impact of meat production. Consequently, European consumers are gradually shifting to alternative protein sources for their diet (Interviews 1, 3 and 7). The De Kweker Category Manager saw in this consumption trend a potential threat to the value capture ability of their company individually and for the entire value chain as well.

6.4.2. Behavioural uncertainty

In general, a low level of behavioral uncertainty has been outlined by the different actors taking part in the analyzed value chain (Interviews 1-7). Only one common type of behavioral uncertainty source was identified by Greenlea representatives and the Managing Director of Schoonderwoerd Vlees.

In the case of Greenlea, the main threat to the business is the potential switch of their suppliers to other competing meat processing companies. However, Greenlea Livestock Buyer (Interview 3) affirmed that the perceived risk of Farmers switch to competitors is quite low as their company has a very big and diversified supply basis dispersed in the entire North Island. Moreover, he explained that Greenlea is quite successful in maintaining their solid supply basis thanks to the consistency and the fairness of the price offered to their Farmers, but also to the very solid relationship established with them.

Schoonderwoerd Vlees's Managing Director, is not concerned about the behavioral uncertainty of his suppliers, rather of his buyers (Interview 6). He explained that even though a longeval relationship has been established with many of their clients, it could happen that some of them suddenly decide to switch to other Importers. The reasons behind this switch could be twofold. From the one side, Schoonderwoerd Vlees's clients can decide to opt for cheaper meat product, as those coming from grass-fed cattle of Brazil or South America. In that case, the clients have simply decided to go for a completely different product and not much can be made to recuperate these clients. From the other side, Schoonderwoerd Vlees's clients can decide to opt for similar meat products as those coming from Irish. To deal with this type of behavioral uncertainty, the Importer said that many strategies can be adopted to get back these clients (i.e. new price, new marketing campaigns, ...) (Interview 6). To conclude, even if the Schoonderwoerd Vlees's Managing Director recognizes the presence of clients' behavioral uncertainty, does not attribute to it a high relevance as "luckily clients tend to rotate a bit and you do not lose that many, because when you lose one of them usually you gain a new one" (Interview 6).

Lastly, De Kweker Category Manager affirmed he does not observe behavioural uncertainty neither before nor after his position in the value chain (Interview 7). He believes that the only intention of Greenlea is to offer an exclusive product and not to compete with them. According to the manager (Interview 7), the same is also true for De Kweker buyers who are simply looking for a flexible and reliable service from this wholesaler.

6.5. Value for partners

Table 12 represents a value map where the value co-created and captured during the transactions among the chain actors is shown. Both for value co-created and value captured, the different forms of value are distinguished in tangible, knowledge and intangible value and divided according to the individual perspective of each chain actor.

Table 12 – Value categorization

	<i>Farmers</i>	<i>Greenlea</i>	<i>Schoonderwoerd Vlees</i>	<i>De Kweker</i>
VALUE CO-CREATED				
<i>Tangible value</i>		Higher payments obtained from the products sold. More accurate production planning enables increased efficiency and, thus, lower operations costs. Higher number of animal heads ensured. No overcapacity risks.	Higher payments obtained from the products sold. More accurate production planning enables increased efficiency and, thus, lower operations costs. Compliance with standards requirements.	Access to exclusive products that can be sold in niche markets for premium prices.
<i>Knowledge value</i>	Market information. Information about cattle killed characteristics.	Market information	Value chain visibility. Market information.	
<i>Intangible value</i>	Flexibility Loyalty Honesty	Brand value Flexibility Loyalty	Creation of new opportunities Brand value Flexibility Loyalty	Active participation to promotional campaigns and product assortment decisions
VALUE CAPTURED				
<i>Tangible value</i>	Regular and consistent payments. Ability to source replenishment stocks.	Regular supply volume Regular supply quality Market access No need for marketing investments Best product allocation	Regular supply volume Regular supply quality Timely shipments	Regular supply volume Regular supply quality Timely shipments
<i>Knowledge value</i>	Market information	Market information	Value chain visibility	
<i>Intangible value</i>	Good relationships	Good relationships Good reputation	Good relationships	Good relationships

Source: Interviews 1-7

6.5.1. Value co-creation

Tangible value

According to the Farmer and the Managing Directors of both Greenlea and Schoonderwoerd Vlees (Interviews 1,5 and 6), the actors' participation to Greenlea value chain enables them to generate a

higher level of value that they could not otherwise create individually. The value co-creation activities performed collectively by the various chain actors result in the generation of tangible value above all. Indeed, all the transactions made among these actors represent revenue-generating exchanges that enable all the partners to financially sustain their individual businesses.

Moreover, according to the Farmer and Livestock Buyer opinions (Interviews 3 and 5), a source of tangible value for both the Farmers and the rest of the value chain is to be found in the adoption of Greenlea On-farm Quality Assurance Program. The Farmers participation in this scheme enables Greenlea to access niche market for high-quality products, which allows them to possibly obtain a premium price for their products. If Farmers would not agree to take part to the programme, no actor in the value chain will benefit of these premiums. Here, a tangible value co-creation process could be observed. From the one side, Greenlea offers to Farmers the possibility to adhere to this compliance scheme that is embodying the specific standards the markets are requiring to them. Without the design of these types of programme, Farmers will probably not be able to autonomously understand the market signals and, in turn, to get paid a premium price (Interview 5). From the other side, Greenlea without the Farmers complying with the scheme would not be able to access niche market, as well as the actors further down in the chain (Interview 3).

Knowledge value

A lack of knowledge value co-creation between the Farmers and Greenlea was recognized to be present by the Farmers, the company's Livestock Buyer and Business Development Manager when interviewed (Interviews 3, 4 and 5). All of them agreed on the fact that the level of information sharing among the Farmers and the processing company is still scarce. Even if many channels to acquire information from Greenlea are available to Farmers, they seem not to be efficient. "I read Greenlea newsletter every month, but I found it interesting to a point. It is informative as it contains answers to Farmers' questions, but it is not that much informative" said the Farmer during the interview (Interview 5). He also added that he would like to have access to information about the eating quality of his meat, about how to which farming technique is better, how to become more consistent without producing too much out of season, etc. Consequently, the knowledge value that could be potentially co-created (and successively captured) is not co-generated yet. Market information does not flow back to Farmers through Greenlea, therefore when they decide to align their operations with the Livestock Buyer's requirements this is done purely on a trust basis. Farmers are confident that if Greenlea, with their higher market knowledge, is asking them to do something differently from how they would do it, it will always be in their common interests. Moreover, according to the Livestock Buyer (Interview 3), through an increased level of information sharing among all the actors in the

chain it would be possible to co-create an increased level of knowledge value. This would enable the creation of a better understanding from all the actors about all the actors.

The collaboration between Greenlea and Schoonderwoerd Vlees enable both to reduce their individual investments for conducting market research about New Zealander and European trends. Indeed, the Importer does not have to be locally present in New Zealand to acquire the needed information on the regional supply and weather conditions that he could easily access from Greenlea. Likewise, Greenlea, which cannot afford the marketing expenses directed to the European end-customer, is able to obtain the needed information about consumption trends from their Importer. Here, the process of knowledge value co-creation is evident (Interviews 2, 6 and 7). In general, all the chain actors agreed on the fact that the highest level of knowledge value is co-created during the process of information sharing undertaken during the personal visit arranged among the actors. Indeed, sometimes it could be difficult to effectively share some information and tacit knowledge just through emails and phone calls and information is best shared during face-to-face meetings (Interviews 2, 6 and 7).

Intangible value

Opportunities to further increase the intangible value co-created with Farmers are present according to Greenlea Sales Manager. He affirmed (Interview 2) that through the adoption of more contracted livestock supply arrangements it would be possible to achieve a more accurate production planning, and thus sales planning.

The presence of Livestock Buyers as intermediaries between Farmers and Greenlea generates a huge intangible value for the entire chain. Thanks to the personal communication skills of the buyers a solid and smooth connection between the farming and the processing stages of the value chain is ensured. In turn, this creates regular flows of products and profit. Additionally, Livestock Buyers are able to maintain the Greenlea good reputation in front of Farmers to sustain their trust and willingness to keep collaborating with them (Interview 3).

According to Greenlea Sales Manager (Interview 2), thanks to the trust-based and open (high information sharing level) that have been established with Schoonderwoerd Vlees, Greenlea is confident that their brand is properly represented within the European market. Therefore, intangible value in terms of enhanced brand recognition is captured by the processing company through the trust-relation and collaboration with the European Importer.

According to the Greenlea Business Development Manager (Interview 4), once the most tangible value was created by Greenlea operations efficiency. Greenlea has become able to produce cheaper than any other beef processing company in New Zealand, namely, 50 animals per day per employee,

thus they are able to capture higher margins. However, now there is nothing that Greenlea can do alone to grow more. Therefore, what they are trying to do now is to focus on sales by creating long-lasting collaborative relationships with all their buyers, which represents a huge source of intangible value that can enable the chain to capture a higher level of tangible value.

6.5.2. Value capture

Tangible value

The tangible value captured by Farmers is represented by their ability to not to have to look for replenishment stocks themselves, as the Livestock Buyers ensure them new animals after having bought from them the ones that will be processed (Interview 5).

According to Greenlea Managing Director (Interview 1), thanks to the establishment of trust-based relationships among their Livestock Buyers and Farmers they are able to capture a higher level of tangible value. Namely, this good relationship enables them to kill a lot more stocks than other companies in the same sector, as Farmers guarantee to provide them with a higher number of animal heads. This, in turn, means that the company is making a good profit and is able to keep its staff employed all year round on both their production plants. Moreover, thanks to the trust and the loyalty established among these chain members enable Greenlea to have access to a regular and first option cattle supply.

The interviewed Sales Manager of Greenlea (Interview 2), affirmed that the strength of their brand reputation co-created together with the European Importer enable all the chain actor to capture higher tangible value in terms of profit. Together these actors have been able to boost the consumers' preference for their products and, in turn, together they can all capture a higher level of profit thanks to the high sales volumes ensured by the recognition of Greenlea brand.

According to Schoonderwoerd Vlees (Interview 6), the tangible value captured by them through the participation in the analyzed chain is the access to a regular supply consistent in its high-quality level.

Knowledge value

According to Greenlea Sales Manager (Interview 2), the collaborative information sharing happening between Greenlea and their Importer enables both of them to increase the reciprocal understanding of each other business. With a greater awareness of each other's activities, they are able to adjust their individual and common strategy to come up with a better way to operate. The same idea was also supported by the Managing Director of Schoonderwoerd Vlees (Interview 6). Therefore, though the knowledge value captured an increased level of tangible value can also be extracted in terms of increased efficiency. Moreover, Schoonderwoerd Vlees ensures to Greenlea an indirect channel to

access valuable information about the end customer of their products. In the Greenlea Sales Manager opinion (Interview 2), Greenlea is too small to undertake marketing activities directly in the European market as the required investments would be too high. As he said: “You cannot be a small company in New Zealand and being involved in the market and in all part of the value chain it just costs too much money” (Interview 2). Therefore, they can access information about European market trends through Schoonderwoerd Vlees. Greenlea Livestock Buyer also affirmed that the link in the chain that is creating the most value is the one with the end consumer as “knowledge value is created by understanding what the customer wants. We can raise the animal, we can process it but if we cannot understand what the customer wants we cannot be able to get the full value for that product [...] the value that the customers give is both because they will pay you for the product at the end but if you are a smart processor they can give you the knowledge of what they want to enable to create more value. So, the intangible there is as much as the tangible.”

On a tangible value level, Schoonderwoerd Vlees through the established relationship with Greenlea has been able to ensure for themselves a consistent supply of high-quality beef. According to the European Importer, New Zealand meat represents the best quality meat available now on the global market. Therefore, they really value their relationship with Greenlea, as among New Zealand suppliers is the one able to ensure them with timely deliveries, consistent quality standards and valid access to New Zealand market information (Interview 6).

Intangible value

According to Greenlea Managing Director (Interview 1), thanks to their ability to keep employed throughout the entire year all their staff does not only represent a source of tangible value. Indeed, this company ability also guarantees them to maintain its good reputation and to be respected by the entire community in which they are working. The sustainability of Greenlea good reputation represents for them a solid source of intangible value captured.

The extremely good relationship established between Greenlea and Schoonderwoerd Vlees enables the processing company to have a secure market access to the European market (Interview 2). Historically, in fact, New Zealand beef exporting companies have never had a good access to Europe if compared to sheep and lamb meat producers which benefit from lower trade barriers. As the costs to access Europe are very high, the only way for Greenlea to increase the value captured in this market is to maintain solid trust-based relationships with their Importer there.

According to Schoonderwoerd Vlees Managing Director (Interview 6), the extremely good relationship and the collaboration established with Greenlea do create intangible value. Namely, the latter enables the two chain practitioners to reach higher flexibility levels in responding to market

changes. For instance, if at one point they may need to place an extra order, they know that due to the extremely good relation they have with Greenlea, the processing company will try their best to make more product available for them.

7. Discussions

Within this chapter, a critical analysis of the results of the interviews and the literature review is presented. The results are used to examine the relationships among the analysed variables by discussing one by one the propositions made within the Conceptual framework chapter (§3).

As this research builds on earlier studies about New Zealand agri-food global value chains conducted by the Agribusiness Economics Research Units of the Lincoln University (NZ) in collaboration with the Wageningen University (NL)¹⁰, a comparison with the findings from these earlier works will be made to increase the validity of the current results. Specifically, Van Velzen (2016) studied the governance role in facilitating the value chain's market orientation. The latter has been defined by the author in terms of intelligence generation, intelligence communication, and responsiveness. As intelligence communication is defined as all the activities done to share market information at large (Grunert et al., 2005) and responsiveness as the actions undertaken by the chain actors in response to the shared information to create value for the end consumer (Grunert et al., 2005), these two constructs seems to overlap with the ones of information sharing and decision synchronisation analysed in this research. Furthermore, Van Velzen (2016) included in her conceptual framework the constructs of bilateral agreements, network governance, trust, and commitment as well. Even if these constructs were analysed in a slightly different way within this research, it is expected that for the high resemblance of that research with the current one a high degree of comparability of the results obtained is present. To conclude, a high degree of comparability is ensured also by the adoption from Van Velzen (2016) of the same research focus. The author analysed four different New Zealand food value chain exporting their products to The Netherlands, for which an overview is provided in the Annexes chapter.

7.1. The Role of Business Environment

In the table below (Table 13), the propositions developed for the expected role of the business environment construct are presented. Later, explanations are provided about the reasons why these propositions have been supported or rejected.

¹⁰ Van Velzen, A. M. M. (2016). *Supply Chain Governance to Facilitate Market Orientation: A Multiple Case Study Research on Global Food Supply Chains*. Thesis submitted for the degree of MSc (Management, Economics and Consumers Studies), Wageningen University, 6 April.;

Saunders, C., et al. (2015) *Consumer Attitudes to New Zealand Food Product Attributes and Technology Use in Key International Markets*. Lincoln University;

Saunders, C., et al. (2016) *How Value Chains Can Share Value and Incentivise Land Use Practices: A White Paper*. Lincoln University: Agribusiness and Economics Research Unit.

Table 13 – Analysis of the Propositions on the Role of Business Environment

<i>Propositions</i>	<i>Proposition</i>	<i>Outcomes (Supported/ Not supported/ Partially supported)</i>
P1	<i>P1a: When environmental uncertainty is high to effectively adopt hierarchical governance structures and control-based coordination mechanisms, chain actors are expected to rely on hybrid governance forms.</i>	Supported
	<i>P1b: When environmental uncertainty is high, chain actors are expected to adopt hybrid governance forms to enable higher levels of collaboration through increased decision synchronisation and information sharing.</i>	Not Supported
P2	<i>P2a: With a high level of behavioural uncertainty, if already established positive relationship exists, chain actors are expected to rely on hybrid governance structures and a balanced combination of formal and informal contracts.</i>	Supported
	<i>P2b: With a high level of behavioural uncertainty, if asset-specific investments have been made, chain actors are expected to rely on hybrid governance structures.</i>	Supported
P3	<i>P3a: The presence of trust and commitment among the chain actors is expected to lead to superior value co-creation by reducing the level of behavioural uncertainty.</i>	Partially supported
	<i>P3b: It is expected that trust-based governance mechanisms are not sufficient per se, rather they must be balanced with control-based governance mechanisms to lead to superior value co-creation.</i>	Supported

Regarding the role of business environment in affecting the value co-creation and capture potentials of New Zealander GVCs, it was hypothesised that with high levels of environmental uncertainty lead to the adoption of hybrid governance forms, which in turns enable higher levels of collaboration through increased decision synchronisation and information sharing (P1a and P1b). The results showed that the New Zealand beef sector is a highly uncertain industry, mainly because of the severe competition, the overcapacity risk, the seasonality of the pasture availability and the demand instability. This high uncertainty seems to have led the chain actors not to implement vertical integration as governance structure, rather throughout the entire value chain hybrid governance structure could be observed. Verbal agreements and formal contracts exhibited the main structures of governance adopted to coordinate the actors' transactions at all the different chain stages. As indicated from many respondents, the high volatility of several environmental conditions outside of the actors' control (i.e. weather) makes it impossible to rely on formal contracts specifying transaction details

such as price and volume. Hybrid governance structures are considered by the respondents to enable higher levels of flexibility in adapting to changing environmental conditions if compared to more hierarchical governance structures. However, the absence of vertical integration and the adoption of hybrid governance structures seems not to push the actors to reach a high level of information sharing and decision synchronisation. Even if general information about New Zealand weather conditions, supply trends and price developments are shared throughout the entire chain, this is not the case for detailed demand data that do not flow back from the European wholesaler to the Farmers in New Zealand. This, in turn, could be seen as one of the reasons for the scarce decision synchronisation among the different actors. These findings seem not to be in line with Claro et al. (2003), Matapoulos et al. (2007) and Denolf et al. (2014), who stated that high environmental uncertainty is expected to result in enhanced collaboration through increased level of joint decision-making and detailed information sharing to absorb the environmental uncertainty. A possible explanation could be found in the Greenlea chain actors' limited size and financial resources that reduce their capacity to invest in increased information sharing activities and in an enhanced integration of their decisions and operations. If Greenlea beef value chain is compared to value chains containing actors with larger size and financial resources (i.e. Zespri kiwifruit and ENZA apple value chains¹¹), a lower degree of information sharing and decision synchronisation could be observed as shown in Table 14.

¹¹ See ENZA, Zespri, *Firstlight Foods and Kumanu value chain structure* in the Annexes

Table 14 – Comparison with ENZA apple and Zespri kiwifruit value chains (Information sharing and Decision synchronisation)

Constructs	Value chain Results		
	<i>Greenlea beef</i>	Van Velzen (2016)	
		<i>ENZA apple</i>	<i>Zespri kiwifruit</i>
Information sharing / Intelligence communication	The data communicated to the Farmers are in the forms of slaughter reports, including information about the cattle transaction history (amount delivery date, price, etc.). Knowledge of Greenlea achievements, the period in which to kill the cattle and cattle replenishment sources are shared verbally with the Farmers. Among the actors further down in the chain, information is shared mainly through e-mail on a weekly or monthly basis, about New Zealand weather conditions and regional demand trends	Information on competitors and complaints is shared by customers with ENZA Belgium. Weekly update on prices in the market and European stock levels of apples from ENZA Belgium to ENZA New Zealand via e-mail. Outcomes of market research are shared by ENZA Belgium with ENZA New Zealand. ENZA updates post-harvest operators (but often slow) and growers on customer or consumer complaints. Market information is shared (when employees of ENZA Belgium and customers visit New Zealand or growers visit customers).	Zespri receives information from customers and Zespri Belgium (outcomes of market research, complaints, feedback on performance, prices, and quality of competitors). Zespri communicates outcomes of market research to a breeding company (Plant and Food Research), growers and post-harvest operators via industry consultation groups, Zespri website, online seminars, magazines, during annual tours and meetings.

Decision synchronisation / Responsiveness	Decisions are scarcely synchronised along the chain. The decision about when to finish the animals is done together by the Farmers and the Livestock Buyers on an individual basis, and on a short-term horizon (around 60 days). The wholesaler and the Importer decide together about the trimestral promotion to be implemented.	Development of new varieties in line with consumer wishes. Setting standards for growers in line with consumer wishes (size, Brix value). Matching demand and supply in terms of product specifications. Respond to wishes for year-round supply by having orchards on the Northern and Southern hemisphere. Respond to complaints by researching the origin of apples and residue levels.	Breeding of new kiwifruit varieties in line with consumer wishes. Setting standards and incentive systems for growers and post-harvest operators based on consumer wishes and competitors' actions (size, dry matter, firmness). Establishment of plans optimal ripening during storage in New Zealand, transportation and in the market in response to customer feedback on the firmness of kiwifruit. Matching demand and supply in terms of volumes and product specifications (size, dry matter, packaging and pesticide levels). Respond to wishes for year-round supply by having growers on the Northern and Southern hemisphere. Respond to complaints by having claim system as a quality guarantee. Respond to prices of competitors.
Bilateral agreements (Governance structure and mechanisms)	At the beginning of the value chain, verbal agreements coordinate the transactions between Farmers and Greenlea. Further down in the chain also formal written contracts are used. The main type of governance mechanisms adopted are the informal ones (trust and commitment).	Formal written contracts and possibly verbal agreements between ENZA and customers. Written contracts between growers and ENZA, post-harvest operators, and ENZA. ENZA focuses on vertical integration.	Vertical integration as growers are shareholders of post-harvest operators and Zespri. Formal written contracts between growers, grower entities, post-harvest operators and Zespri.

Source: Interviews 1-7 and Van Velzen (2016)

Furthermore, it was hypothesised that with a high level of behavioural uncertainty, actors would have opted for the adoption of hybrid governance structures and a balanced combination of formal and informal contracts only if already established positive relationship among them was present or if

asset-specific investments had been made (P2a and P2b). Indeed, it was expected that informal governance mechanisms based on trust are not sufficient per se but should be balanced with control-based governance mechanisms to lead to superior value co-creation (P3b). This expectation was supported by both the findings of the current study and the earlier studies conducted by Van Velzen (2016), in all the analysed value chains but one¹², a balanced combination of formal and informal governance mechanisms was observed and indicated as responsible for the higher performance in terms of value co-creation. By contrast, the only value chain adopting just one type of governance mechanisms was indicated as less performing in terms of market orientation.

The presence of trust and commitment among the chain actors was expected to lead to superior value co-creation by reducing the level of behavioural uncertainty (P3a). This proposition was partially supported by the results, which showed how the high level of trust among the actors was sufficient to reduce substantially the level of behavioural uncertainty along the chain. In fact, at all the interaction points between two different chain actors, the solid trust basis present reduced drastically the uncertainty related to the future actors' conduct even if the same actors were not fully committed to each other. This result is partly in line with Elg (2008), Micheels and Gow (2011) and Karami et al. (2015) findings, which supported the idea that the presence of trust among chain actors should enhance their willingness to be committed to the chain to reduce behavioral uncertainty. A possible explanation of that could be found in the actors' fear to be fully committed to just one value chain operating in highly uncertain business environments. Indeed, the respondents affirmed that strategically they cannot decide to "bet just on one horse" even if they blindly trust it. Rather, they prefer to diversify both their suppliers and customers base by committing their products or services to more than one actor (Interview 6). However, it was found that the higher the commitment of one actor to another one, the higher the level of trust between the two. The crucial role of trust and its interrelation with commitment were confirmed by the results of Van Velzen (2016) too. All the analyzed value chains recognized the extreme relevance of trust at every stage in the chain as it influences the degree of value co-creation by enhancing the information sharing process and partly also the level of commitment among the actors (Van Velzen, 2016). Especially, trust in integrity and competence trust were found to be the most important type of trust because they are the main foundation of long-lasting relationships among the chain members (Van Velzen, 2016; Interviews 1, 6 and 7). For instance, in the case of ENZA apple value chain trust is acknowledge as crucial to have transactions in the chain, as it is related to information sharing and it increases the actors' willingness

¹² The Kumanu lamb value chain adopts only verbal agreements. Additionally, it results to be the least responsive value chain among those analysed by Van Velzen (2016) as the demand is not always matched by supply neither in terms of product characteristics, nor in terms of volume.

to make more efforts to satisfy the needs of other actors in the chain. Trust in integrity enables each actor to be confident in the accuracy and correctness of the information received and, in turn, contribute to commitment (Van Velzen, 2016).

7.2. The impact of Governance

Table 15 shows the propositions developed for the expected role of governance. Later, explanations are provided about the reasons why these propositions have been supported or rejected.

Table 15 – Analysis of the Propositions on the Role of Governance

<i>Propositions</i>	<i>Proposition</i>	<i>Outcomes (Supported/ Not supported/ Partially supported)</i>
P4	<i>P4a: The adoption of lead organisation governed networks is expected to negatively influence information sharing activities. By contrast, shared governance is expected to result in enhanced information sharing activities.</i>	Partially supported
	<i>P4b: Lead organisation governed networks are expected to lead to the adoption of formal governance mechanisms if high levels of power asymmetry are present. Contrarily, shared governance is expected to result in the adoption of informal governance mechanisms due to a higher level of power symmetry among the chain actors.</i>	Partially supported
	<i>P4c: When leadership is the result of non-coercive source of power, it is expected to positively affect trust and commitment such as shared governance.</i>	Supported
P5	<i>P5: The selection of hybrid governance structures is expected to facilitate value chain collaboration and, in turn, enhance value co-creation activities.</i>	Supported
P6	<i>P6a: It could be expected that a balanced combination of formal and informal governance mechanisms will enhance the value co-creation ability of collaborative value chains operating in a dynamic business environment.</i>	Supported
	<i>P6b: The adoption of informal governance mechanisms (trust and commitment) is expected to increase the value co-creation ability of collaborative value chains by increasing their flexibility and information visibility.</i>	Supported
P7	<i>P7: Formal coordination mechanisms are expected to increase the alignment of incentives among the different actors of the value chain.</i>	Not supported

Propositions were developed on the expected role of network governance (P4 a, b and c). None of the actors was found to act as a lead organisation, namely, none of the actors was responsible for the coordination of the main network-level activities and decisions. Additionally, none of the chain

participants was found to be very powerful if compared to the others. Similarly, Greenlea value chain cannot be described as a NAO governed networks because there is nothing as a separate organization in charge of the network governance (Provan and Kenis, 2008). Therefore, it seems that the network governance structure closer to the one implemented by Greenlea value chain is the one of shared governance. Confirmations were found for the belief that the adoption of shared governance positively affects the trust and commitment levels throughout the entire chain, which in turn result in enhanced information sharing activities and in the adoption of informal governance mechanisms. The latter result is in line with the studies conducted by Provan and Kenis (2008) and Van Velzen (2016), who pointed out that the regular meetings undertaken together by the different chain actors to coordinate the network activities and decisions contribute positively to the development of mutual trust, commitment, and intelligence communication. As underlined by Greenlea Sales Manager (Interview 2), not all the collaborators are good in sharing information, but the regular face-to-face meetings organized together between the Farmers and Greenlea, or between Greenlea and Schoonderwoerd Vlees, substantially increase the conviction of the mutual trustworthiness of the actors and, in turn, their willingness to commit their resources to the chain as well as to share information. Indeed, within these meetings, the different chain participants have the occasion to express their opinion and jointly understand what is better for the entire chain, namely, they can enjoy a symmetrical distribution of power. In the case of the Kumanu lamb value chain investigated by Van Velzen (2016), the need for organizing more face-to-face meetings is advocated to increase the trust level among the chain actors. To conclude, if compared to almost all the value chains investigated by Van Velzen (2016) (see Table 16 shared governance), namely, ENZA apple, Zespri kiwifruit and Firstlight Foods Cervena venison, Greenlea beef value chain displays a lower level of network information sharing as there are no face-to-face meetings organized together with the consumers, nor with all the different actors present at one time. This could be seen as an unexploited opportunity to further enhance the value co-creation process of the chain.

Proposition P4c could not be directly tested, as leadership could not be observed in the analysed case study. However, through a comparison with the findings from Van Velzen (2016) research it can be affirmed that the opposite was found to be true as, in line with Hernández-Espallardo and Arcas-Lario (2003), the presence of a leading actor was found to be positive for the market orientation, and thus for information sharing, of chain actors with limited individual resources and knowledge to autonomously increase their value proposition for the end consumers. Furthermore, in line with this result, both Greenlea Sales Manager and Livestock Buyer (Interviews 2 and 3) claimed the necessity

of the creation in the chain of a figure that would take a leading role to enhance the value co-creation and capture potential of the entire chain.

To continue, it was also expected that the presence of leadership would have led to use more formal types of bilateral agreements (P4b). This hypothesis was neither supported, nor rejected through by the analysis of the research results as leadership was not observed within Greenlea value chain. However, through a comparison of the current case study's findings and the ones from Van Velzen (2016) studies, the proposition was only partially supported. Indeed, it was found that only when the chain leader detains a coercive source of power, leadership results in the use of formal governance mechanisms. This was the case of ENZA apple value chain, where the ownership of specific fruits' varieties represents a coercive source of power for the processing company and the predominant adoption of formal written contracts is observed (Van Velzen, 2016). Contrarily, within Firstlight Foods Cervena venison value chain a combination of formal (contracts) and informal (trust) governance mechanisms corresponded to the establishment of leadership through non-coercive sources of power. Therefore, what argued in the literature by Pilbeam et al. (2012) that suggested that the choice between formal and informal governance mechanisms is influenced by the presence of asymmetries in the power distribution along the value chain, is not supported. Rather it seems that, when selecting the governance mechanisms to be adopted, what really matters is if the source of power detained by the dominant actor (if present) is a coercive one or not.

Table 16 – Network governance

Construct	Value chain Results				
		Van Velzen (2016)			
		<i>ENZA apple</i>	<i>Zespri kiwifruit</i>	<i>Firstlight Foods Cervena Venison</i>	<i>Kumanu lamb</i>
Lead organisation governed network	There is not an actor who oversees the entire value chain by taking a lead in connecting all the value chain members.	ENZA represents the chain leader as it oversees the whole value chain, oversees intelligence generation activities, keeps the actors connected, optimises the flow of products, influences the other actors' behaviour by setting standards for apples growing and packing, and establishes incentive systems. Its source of power is represented by the vertical integration and the possession of the Jazz and Envy apple variety rights.	Zespri represents the chain leader by performing the same activities described for ENZA. The Zespri main source of power is represented by its single desk structure, namely, this company is the only one allowed to export kiwifruit from New Zealand to the rest of the world (Australia excepted).	Firstlight Foods plays a leadership role. It oversees the whole value chain, oversees some intelligence generation activities, connects the chain actors, optimises the product flow, influences the other actors' behaviour through incentive systems. The trust nourished by Farmers in the company competencies represents Firstlight Foods main source of power.	ANZCO performs only few activities as chain leader. It optimises the products flow (but unsuccessfully), influences the behaviours of others chain members (through incentive systems). However, there is not an actor who oversees the entire value chain by taking a lead in connecting all the value chain members.

<p style="text-align: center;">Shared governed networks</p>	<p>Meetings among Farmers and Livestock Buyers are organised several times per month, while the Farmers can meet Greenlea board managers during the annual Field Dates. Greenlea annually visits Schoonderwoerd and the other way around. Schoonderwoerd meets its clients every three months to discuss the promotion activities. Scarce face-to-face meetings are organised among De Kweker and its clients.</p>	<p>Weekly meetings are organized among the managers of the orchards, as well as monthly meetings among contracted growers, orchard managers, post-harvest operators and ENZA. Meeting among ENZA's subsidiaries managers and ENZA New Zealand are made twice a year, while growers' meetings are from four to six times per year. Growers annually visit the Dutch market and Dutch customers visit New Zealand.</p>	<p>There are monthly meetings of the industry consultation groups. Bimonthly conferences among market and post-harvest representatives. Annual tours are organized for customers to visit New Zealand, in turn, growers' and post-harvest operators' visits to the Dutch market thanks are organised by Zespri and the post-harvest operators.</p>	<p>Within the producers' group Farmers try to help each other. The entire producer group have to agree on the admission of new Farmers to the group. Meetings of producer group and Firstlight Foods are made four times per year. The Annual General Meeting is attended by Farmers, Firstlight Foods and some customers. Customers visit New Zealand and growers visit the Dutch market. An Annual Deer Industry Conference is organised as well.</p>	<p>Meetings between the board of Farm Quality Group and ANZCO are made several times during the year. The Annual General Meeting is attended by Farmers, ANZCO and, if possible, by Schoonderwoerd. Two or three Farmers visited Schoonderwoerd. ANZCO visits Schoonderwoerd annually. The need for more face-to-face meetings is advocated by all the actors to improve their value chain awareness.</p>
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Network administrative governed network (NAO)	There is not a facilitator internal or external to the chain established to govern the network activities.	Third party technicians visit Farmers and support them through newsletters.	Even if there is not a NAO external to the chain, Zespri assists growers for the implementation of Global GAP and by providing them with knowledge on growing techniques with an education system, workshops and online seminars.	DINZ plays the role of facilitator for the deer industry by assisting exporters in developing their markets, and by assisting Farmers in improving their farm management practices. DINZ also facilitates intelligence generating activities and shares market information with Firstlight Foods.	A Farm Quality Group provides advice to Farmers on farm management practices.
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Source: Interviews 1-7 and Van Velzen (2016)

Below, the formulated proposition on the role of governance as bilateral governance structures and coordination mechanisms are discussed.

The adopted bilateral governance structure was predicted to positively impact the level of chain collaboration and eventually leads to enhanced value co-creation activities (P5). A strong support was found for P5. In terms of tangible, intangible and knowledge value co-created and captured, it was found that the reliance on governance structures in between of spot-market relationships and hierarchy was beneficial to the willingness of all the actors to collaborate with each other. A possible explanation could be found in the increased level of flexibility derived from the adoption of governance structures away from the hierarchical forms. In line with the findings from Peterson et al. (2001), spot-market relationships are not beneficial to information sharing and are focused only on the short-term time horizon. This can be a possible explanation why they were not adopted when collaborative efforts wanted to be undertaken. The same result was also found by Van Velzen (2016), when analysing ENZA apple and Firstlight Foods Cervena venison value chains, which jointly adopted both verbal and formal agreements (namely, hybrid governance structures) to enhance their level of information sharing intended to ameliorate their value propositions for the end consumers.

To continue, also the constructs of governance mechanisms was hypothesised to have an influence on the level of chain collaboration and, eventually, on value co-creation and capture. A solid support was found for the expectation that a balanced combination of formal and informal governance mechanisms enhances the value co-creation ability of collaborative value chains operating in a dynamic business environment (P6a). In the study from Van Velzen (2016), three out of the four value chain analysed adopted the use of formal governance mechanisms. All the three also confirmed the relevance of trust and commitment (informal governance mechanisms) for the correct functioning of their chain operations (See Table 17). If compared to the only value chain adopting solely informal governance mechanisms (namely, the Kumanu lamb value chain), the previous three chains were found to be more market oriented and, thus, to be able to co-create higher level of value for the end consumers and in turn for the entire chain. Therefore, also the latter observations confirm P6a.

Table 17 – Informal governance mechanisms

Construct	Value chain Results				
	<i>Greenlea beef</i>	Van Velzen (2016)			
		<i>ENZA apple</i>	<i>Zespri kiwifruit</i>	<i>Firstlight Foods Cervena Venison</i>	<i>Kumanu lamb</i>
Trust	The type of trust linking these two chain actors is mainly trust in integrity, as it is based on the longevity of the interpersonal relationships established among the Farmer and the Livestock Buyer, which is characterized by loyalty, consistency and fairness. Between the actors further down in the chain trust is present in all its forms.	Trust is a crucial element to ensure ongoing transactions in the chain. Trust is related to information sharing and increases the actors' willingness to enhance their commitment to the chain goals. Trust in integrity is the basis of long-lasting relationships among the chain actors.	Trust is essential in sustaining the functioning of each chain stage. Competence trust is present among the actors, as well as trust in integrity. Trust among the actors is reinforced by an open and transparent information sharing process along the chain. Trust is the basis of long-lasting relationships among the chain actors.	Trust is crucial as it positively affects the degree of information sharing. Competence trust and trust in integrity are highly present among the actors. Trust is the basis of long-lasting relationships among the chain actors.	Trust represents a solid basis for actors' relationships. The initiation of collaboration in the value chain demonstrates that trust is present among the partners. Information sharing through face-to-face meetings contributes to enhanced levels of trust.

Commitment	Farmers commit part of their livestock to Greenlea as they trust that this company will not take advantage of its position and behave fairly towards them. Due to the high level of trust, Schoonderwoerd is almost totally committed to Greenlea for its beef supply.	The open and transparent information sharing process, as stimulated by trust, contributes to increased actors' commitment to the chain goals.	Zespri ensures to growers consistent and safe returns, in turn, the growers commit their fruits to Zespri. Commitment is positively affected by the spread presence of competence trust among the chain members.	The Farmers shareholding of Firstlight Foods contributes to their commitment to the chain. There is a high level of commitment of all the actors towards the chain, shown by the high level of time, efforts and resources invested by the actors to achieve value chain goal.	Farmers are moderately committed to the chain as some of them always try to respect the supply of the agreed meat volumes. ANZCO and Schoonderwoerd are committed to the value chain. Even if they are not earning a lot from selling Kumanu, they still join that chain.
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The adoption of informal governance mechanisms (trust and commitment) was found to enhance the value co-creation ability of Greenlea value chain by increasing its flexibility and information visibility (P6b). The same conclusion was supported also by Grunert et al., (2010); Kähkönen and Tenkanen, (2010); Kwon and Suh, (2005) and Trienekens and Wognum, (2013), who argued that trust is positively associated with information sharing among the different chain actors. This positive relation between trust and collaboration in terms of information sharing was observed also in the ENZA apple and Firstlight Foods Cervena venison value chains by Van Velzen (2016), who outlined that when trust was present among the chain members, the latter were more inclined to share information among them to better match their operations to the actual market demand. By contrast, formal coordination mechanisms were not found to increase the alignment of incentives among the different actors of the value chain (P7). Even when formal contracts were underwritten by Greenlea and Schoonderwoerd Vlees, by Schoonderwoerd Vlees and De Kweker and by De Kweker and their clients, this was not corresponding to an increased level of incentive alignment. This result was not in line with what was said by Narayanan and Raman (2004) when stating that the adoption of formal mechanisms of governance (i.e. revenue-sharing contract) may increase the alignment of incentives among different partner and, in turn, improve the successfulness of the whole chain. A possible explanation of these contrasting results, could be the fact that even if formal contracts are adopted by Greenlea value chain actors these are usually not perceived as legally binding. In line with this result, also the findings of the study by Van Velzen (2016) showed that when formal governance mechanisms are not adopted incentive alignment schemes were present in anyway. In the case of Kumanu lamb value chain, the

only chain adopting solely informal mechanisms of governance, financial incentives for the Farmers able to provide a consistent lamb supply were realised (pay-per-performance scheme).

7.3. The impact of Collaboration

In the table below (Table 18), the propositions developed for the expected role of collaboration are presented. Later, explanations are provided about the reasons why these propositions have been supported or rejected.

Table 18 – Propositions on the Role of Collaboration

<i>Propositions</i>	<i>Proposition</i>	<i>Outcomes (Supported/ Not supported/ Partially supported)</i>
P8	<i>P8: When information sharing, decision synchronisation and incentive alignment are properly balanced, value chain collaboration is expected to be positively associated with value co-creation and capture through higher value chain information visibility and flexibility.</i>	Supported
P9	<i>P9: Timely, trustworthy and complete information sharing is expected to be the collaborative activity with the greatest impact on chain value co-creation as it is the basis for decisions synchronisation and incentive alignment.</i>	Supported
P10	<i>P10: Information sharing is expected to be positively associated with trust, which in turn is negatively associated with behavioural uncertainty.</i>	Supported
P11	<i>P11: It is expected that through decision synchronisation, value chain actors can achieve higher value co-creation and capture by overcoming their limited individual decision capability, and by sustaining information sharing and incentive alignment along the chain.</i>	Supported
P12	<i>P12: The adoption of effective incentive alignment schemes is expected to increase the chain value co-creation and capture potential by reinforcing the efficacy of information sharing and decision synchronisation, and by decreasing behavioural uncertainty.</i>	Partially supported

Concerning the impact of collaboration on value co-creation and capture, it was hypothesised that when all the collaboration constructs (namely, information sharing, decision synchronisation and incentive alignment) are properly balanced, value chain collaboration is positively associated with value co-creation and capture through higher value chain information visibility and flexibility (P8). The latter hypothesis was supported by the findings., no incentive alignment schemes are adopted along Greenlea value chain and a low degree of decision synchronisation can be observed among the chain actors. This has been recognised as one of the causes leading Greenlea to show lower levels of collaboration and, thus, value co-creation and capture if compared to other chains adopting a more

balanced combination of information sharing, decision synchronisation and incentive alignment. The interviewed actors confirmed that their collaboration is “all about information sharing” (Interviews 2,6 and 7). Even if, the latter result confirmed what was expected with P9 (*“Timely, trustworthy and complete information sharing is expected to be the collaborative activity with the greatest impact on chain value co-creation as it is the basis for decisions synchronisation and incentive alignment”*), when looking at value chains as the ones of ENZA apple and Zespri kiwifruit, described by Van Velzen (2016) in her research, it could be noticed how the higher level of market communication, responsiveness and the presence of properly designed incentive alignment schemes enhance the level of collaboration among the chain actors. Value is co-created and eventually captured by these chains through a higher level of visibility of market data by all the actors involved in the chain and their capability to adapt to changing consumers’ wishes and competitors’ strategies. This results to be in line with the findings of Simatupang and Sridharan (2008). Furthermore, even if not hypothesised, it could be expected that a further reason for the higher level of information visibility along the entire chain could be seen in the presence of ENZA and Zespri in the European market (ENZA Belgium and Zespri Europe). Firstlight Foods Cervena venison and the Kumanu lamb chains do not own a physical headquarter in Europe. However, they are represented in Europe by ambassador chefs, in the first case, and by ANZCO Europe, in the second one. This could be a reason why they are able to undertake a higher level of collaboration with the actors downstream in the chain. This finding would be in line with the argument by Gupta and Govindarajan (2001) that supported the idea according to which global presence makes available five different value-creation opportunities, namely, the adaption to the differences of the local market, the exploitation of scale and scope economies, the selection of optimal locations for each chain activity, and the maximization of knowledge transfer across these locations. In line with this reasoning, Greenlea Sales Manager also agreed on the fact that to be able to reach higher levels of information sharing would require being present in the foreign market, but that this would imply a too huge investment for Greenlea (Interview 2). However, as shown by the case of Firstlight Foods Cervena venison, the ambassadors chefs are not directly employed by the processing company, rather by their European wholesaler for restaurants overcoming the need for high financial investments.

Talking about information sharing, the latter construct was expected to be positively associated with trust, which in turn was predicted to be negatively associated with behavioural uncertainty (P10). This proposition found a solid support in the research findings. Indeed, the interviewed actors said that when trust is present, then, everyone is willing to share information based on the conviction that this information will not be used in opportunistic ways, but to pursue the common chain’s goals

(Interviews 2, 3 and 6). The same result was found from Van Velzen (2016), who observed that where trust levels are low as in the case of ENZA apple value chain intelligence communication is reduced. The latter finding seems to be in line with the available literature that supports the idea that trust sustains an open and honest communication among the various actors of the chain (Grunert et al., 2010; Kähkönen and Tenkanen, 2010; Trienekens and Wognum, 2013).

Moreover, it was also expected that through decision synchronisation, value chain actors can achieve higher value co-creation and capture by overcoming their limited individual decision capability, and by sustaining information sharing and incentive alignment along the chain (P11). According to the findings from the interviews, due to a low level of decision synchronisation several opportunities of higher value co-creation and capture remain unexploited. While, when decisions are aligned as in the case of Greenlea and the Farmers that jointly decide the best time to kill the cattle, a higher value could be extracted from the collaborative relation among the actors. This seems to be in line with the studies by Simatupang and Sridharan (2008), which highlighted the necessity to synchronise the chain decision-making process to increase the joint returns in terms of overall chain profit and to lower the total costs. By synchronising its decisions with the Farmers through the mediation of the Livestock Buyers, Greenlea can lower the procurement costs and, in turn, enhance the chain profitability by always ensuring a constant supply (Interviews 1 and 3).

To conclude, the proposition according to which the adoption of effective incentive alignment schemes is expected to increase the chain value co-creation and capture potential by reinforcing the efficacy of information sharing and decision synchronisation, and by decreasing behavioural uncertainty (P12) was only partially confirmed. According to Greenlea managers and the interviewed Livestock Buyer (Interviews 1,2 and 3), the adoption of incentive alignment schemes could be harmful to the value co-creation and capture processes of the chain. Indeed, according to them the use of incentive alignment for the Farmers could result, from the one side, in increased satisfaction levels for those Farmers able to meet the requirements needed to receive the established incentive. From the other side, those Farmers not able to receive the desired incentive would be upset. This situation, in turn, will increase the competition, rather than the collaboration among the Farmers and, thus, it will negatively influence the value co-creation and capture potentials of the entire chain. This result is not in line with what argued by Simatupang and Sridharan (2008), who affirmed that when effective incentive alignment schemes are applied, they will generate value by increasing the motivation and efficiency of all the actors. By contrast, this finding is not in line with what was found by Van Velzen (2016) in her research. She described the adoption by ENZA apple chain of a typical pay-per-performance incentive alignment scheme. Indeed, the Farmers supplying ENZA were given a

premium when able to provide apples matching with stricter requirements. According to the author (Van Velzen, 2016), the adoption of the latter scheme improved the achieved levels of value co-creation and capture as the chain actors were able to supply more demanding markets that, in turn, were willing to pay premium prices for ENZA products.

8. Conclusions and Recommendations

Here, the answer to the research question and sub-questions are finally debated. Moreover, the potential limitations of this study and suggestions for further research are presented.

The aim of this study was to investigate *“How do governance, collaboration and business environment interact in affecting the value co-creation and capture ability of New Zealand agri-food global value chain?”*.

Four research sub-questions were developed to answer the main research question as stated above. Thanks to an in-depth literature review, a conceptual framework depicting the relationships among the analysed constructs was proposed and tested through an empirical investigation of Greenlea beef value chain. Moreover, to increase the study results validity a comparison with the findings from a previous study by Van Velzen (2016) was executed.

Sub-question 1 was aiming at understanding *what the value co-creation and value capture potential of collaborative New Zealand agri-food global value chains is*. Through the literature review, it was found that collaborative value chains detain a higher potential in terms of value co-creation and capture of disaggregated value chains. Specifically, it was found that both tangible, knowledge and intangible value can be jointly created by the chain actors adopting collaborative behaviours. Moreover, within collaborative value chains the process of value capture by the different chain actors is more likely to be performed in an equitable way. Additionally, the analysed cases showed that higher the collaborative activities undertaken, the higher the ability of the chain actors to co-create and capture tangible, intangible and knowledge value with respect to when the chain actors act individually. Therefore, it can be concluded that collaborative New Zealand agri-food global value chains detain a higher value co-creation and value capture potential if compared to non-collaborative value chains.

Sub-question 2 was formulated to find out *what the business environment role in affecting the value co-creation and capture potential New Zealand agri-food global value chains is*. Thanks to the literature review, the operationalization of business environment in the two constructs of environmental and behavioural uncertainty was performed. Environmental uncertainty was defined as the extent to which the future state of a value chain operating environment could be accurately forecasted. The interviewed Greenlea value chain actors addressed several factors of environmental uncertainty hindering their value co-creation and capture potential. However, two main sources of environmental uncertainty were pointed out by all the chain actors. Firstly, the high instability of New Zealand weather, which affects the availability of pasture and, in turn, the cattle weight and quality,

was recognised as the biggest constraint in the chain ability to co-create and capture value. The weather instability of the foreign markets supplied by Greenlea has also been found to affect the end customer demand and to create uncertainty in the business. Indeed, when the weather is nice in the European markets, the meat demand usually increases as the end-customers can do barbeques outside and eat more meat (Interview 6). Secondly, the European market barriers represented by the imposition of a quota scheme and a 20 per cent import tariff has been indicated as environmental factors hampering especially the value capture potential. Concerning behavioural uncertainty, the latter construct was defined as the extent to which the future behaviour (i.e. actions and decisions) of a value chain partner could be accurately forecasted. In general, a very low level of behavioural uncertainty was indicated to be present among the chain actors. A possible explanation for this result has been recognized in the high level of trust among all the actors in the chain that enhances the information sharing activities among them.

Sub-question 3 was formulated to answer the question about *what the value co-creation and capture ability resulting from the information sharing, decision synchronisation and incentive alignment activities currently performed by New Zealand agri-food global value chains are*. Indeed, through the literature review, the measurement of the degree of information sharing, decision synchronisation and incentive alignment activities were found to provide a valuable collaboration index (Simatupang and Sridharan, 2005). When comparing the level of information sharing, decision synchronisation and incentive alignment among the Greenlea value chains and the value chains analysed by Van Velzen (2016), it was found that the level of collaboration achieved by New Zealand agri-food global value chains is not homogeneous, however, in all the studied chains unexploited opportunities for increased levels of collaboration are present. Indeed, it was found that when information sharing, decision synchronisation and incentive alignment are properly balanced, value chain collaboration is expected to be positively associated with value co-creation and capture through higher value chain information visibility and flexibility¹³. However, in none of the studied chains the three constructs were found to be properly balanced. For instance, the analysis of Greenlea value chain revealed that despite the actors' recognition of the crucial role of collaboration, the chain collaborative efforts are only focused on information sharing. Thus, Greenlea was found to achieve a lower level of value co-creation and capture if compared to chains with a more balanced effort in terms of information sharing, decision synchronisation and incentive alignment (Zespri kiwifruit and ENZA apple value chain). Incentive alignment and decision synchronisation activities are scarcely performed and not

¹³ Here, value chain flexibility is intended as the ability of the chain actors to modify their initial arrangements to improve their adaptability to new changes in their value chain (i.e. new consumers requirements). Value chain flexibility is crucial as the uncertainty level of the chain business environment increases (Wang and Wei, 2007).

recognised as relevant for value co-creation and capture. Even though all the interviewed actors recognized the crucial role of information sharing, some of the analysed value chains (in particular, Greenlea beef and Kumanu lamb) are still characterized by a fragmented information flow along the chain. Consequently, unexploited opportunities (i.e. new products development, premium price, increased efficiency, etc.) are present. Therefore, it can be concluded that a continuous flow of information forward and back from the farmers to the end consumers leads to higher level of value co-creation and capture.

Sub-question 4 investigated *the governance forms currently adopted by New Zealand agri-food global value chains and how they affect the chain value co-creation and capture*.

The empirical findings showed that the governance forms adopted by the investigated New Zealand agri-food global value chains are quite different even if they all have to face similar challenges in terms of environmental and behavioural uncertainty. None of the chains was found to adopt spot-market governance structures, but all the other governance forms in terms of both governance structure, mechanisms and network governance were observed. The adoption of diverse governance forms has been found to result in different levels of value co-creation and capture. Specifically, those chain adopting hybrid governance structures and a combination of formal and informal governance mechanisms, which enable a balanced use of control and trust, were acknowledged to better perform in terms of value co-creation and capture thanks to an increased level of chain flexibility and information visibility. Moreover, also the selected network governance has been found to impact the value co-creation and capture processes as it affects both the level of information sharing and the type of governance mechanisms adopted.

Through the answers obtained to the research sub-questions, a conclusion can be now elaborated for the main research question: *“How do governance affect collaboration, value co-creation and capture activities of New Zealand agri-food global value chain operating within a given business environment?”*. The literature review and the analysed case studies showed that value chain governance influences value co-creation and capture in many ways through collaboration. Firstly, it was found that the adoption of hybrid governance structure enhances the chain information sharing by enabling an increased level of chain flexibility and information visibility. The improved level of information sharing achieved, in turn, positively affects the value co-creation and capture processes. Secondly, the adoption of both formal and informal coordination mechanisms, which lead to a balanced combination of trust and control, positively affects the value co-creation and capture processes too. The proportional presence of trust as informal governance mechanisms and control (as formal governance mechanisms exercised mainly through the establishment of formal contracts)

enhances collaboration mainly by exercising a positive effect on the actors' willingness to share information. Lastly, also the selected network governance affects the information sharing constructs and, in turn, value co-creation and capture. It has been found that information sharing is positively influenced by shared governance and also by lead organisation governance but only when leadership is the effect of a non-coercive source of power. Network governance has also been found to influence the type of governance mechanisms adopted by the value chain through the construct of power asymmetry. From the one side, shared governance involves symmetrical power distribution among the chain actors and, in turn, has been found to lead to the adoption of informal governance mechanisms. From the other side, lead organisation governed networks are characterised by an asymmetrical power distribution and lead to the adoption of formal governance mechanisms. Therefore, it can be concluded that networks showing elements of both shared governance and leadership will achieve higher levels of value co-creation and capture as they will present a balanced combination of formal and informal governance mechanisms, as it has been observed in the Zespri kiwifruit and in the ENZA apple value chains.

Moreover, it can be concluded that the governance construct does not only influence collaboration but is affected by collaboration too. Indeed, information sharing positively affects the level of trust among the chain actors, which in turn positively affects the level of commitment (informal governance mechanism). Indeed, when trust is present among the different chain actors, the latter are willing to commit their resources and competencies to the chain. Additionally, collaboration has been found to positively affect value co-creation and capture when characterised by a balanced combination of information sharing, incentive alignments and decision synchronisation activities.

To conclude, it was found that construct of governance affects and is affected by the environmental and behavioural uncertainty levels characterising the value chain business environment. High levels of environmental uncertainty were found to lead to the adoption of hybrid forms of governance, which enable a higher chain flexibility in dealing with a highly unstable environment. The presence of behavioural uncertainty has been found to lead to the adoption of hybrid governance structure too. By contrast, the level of behavioural uncertainty turned out to be negatively affected by the presence of trust (informal governance mechanism) among the chain actors and by the adoption of suitable incentive alignment schemes. When the trust basis among the different chain actors is solid and suitable incentive alignment schemes are implemented, then the level of behavioural uncertainty along the chain is drastically reduced.

8.1. Theoretical contribution

Various contributions of this study to the available literature can be listed. This study departs from the concept of global value chain (Gereffi and Lee, 2012) and one of its main contributions is to clarify the interaction among global value chain governance forms, collaboration and value co-creation and capture. To the author knowledge, no previous studies considering together the interactions among the latter constructs have been made. Indeed, evidences on how governance affects value co-creation and capture through collaboration were acknowledged to be scarce (Ramon-Jeronimo et al., 2017).

Moreover, contextual variables have been included in this research in terms of environmental and behavioural uncertainty levels, to try to understand under which conditions the proposed conceptual model is valid. The role of the business environment has been rarely included in value chain research (Ramon-Jeronimo et al., 2017).

Another contribution is represented by the analysis of a four-tier value chain and its network governance. Even if the focus of this research has been kept on bilateral relationships, differently from most of the earlier studies (Denolf et al., 2015), this research does not address only the analysis of dyadic relationships (i.e. supplier-buyer), but it considers the chain as a whole too.

Additionally, this research contributes to the already existing literature on governance as it does not only consider governance in terms of governance structure (Raynaud et al., 2005), nor just in terms of governance mechanisms (Martins et al., 2017) nor solely as network governance (Provan and Kenis, 2008). Rather this study accounts for the multidimensionality of the governance constructs and contributes to the literature by comprehensively capture the diverse governance aspects and their individual interactions with the other constructs analysed.

Lastly, as claimed by Kähkönen (2012) since food companies are focusing on value co-creation more and more, this research that departs from the value net perspective and focuses on agri-food global value chain value co-creation and capture results to be highly relevant to the agri-food industry research.

8.2. Limitations and suggestions for further research

Even if the case study design has been appreciated for their generally high level of internal validity, they usually suffer from poor external validity as to generalize the case results to a larger population is not easy (De Vaus, 2001). Likewise, the external validity of the current research represents one of its main limitations. In effect, it was not possible to conduct a multiple case study as originally

planned. However, to reduce the threat of a low external validity, an attempt was made by comparing the findings from previous case studies and the ones obtained. Furthermore, all the observed cases have been selected within the agri-food industry and, thus, further studies about value chains pertaining to different industries should be conducted to verify the validity of the research findings in wider contexts.

Another limitation of the current study is represented by the only adoption of a qualitative approach. Further research utilizing both a qualitative and a quantitative approach is suggested to better investigate the concept of value co-creation and capture in more tangible terms. As previously recognized by Grönroos (2011), the adoption of an analytical approach is needed to develop accurate models of value co-creation that include chain actors' individualistic value creation efforts, activities facilitating the other actors' value creation and joint collaborative efforts for value co-creation. Furthermore, the adoption of a qualitative approach did not enable the development of measurable and testable hypothesis. Thus, propositions were formulated, which can be very difficult to prove in a scientific context. Therefore, further quantitative study providing new testable data result to be necessary.

Moreover, the access to several interviews' respondents was limited as just one representative of each value chain stage was interviewed. To deal with the limited access to interviewees a careful selection of the respondents was made by selecting each person based on his role in the value chain and his capacity to provide accurate and extensive information. Therefore, further research is suggested able to interview a larger range of respondents. Specifically, it is suggested that for each stage of the value chain more than one representative should be interviewed. Additionally, it would be valuable to extend the interviews also to actors external to the chain (i.e. chain competitors, industry bodies, etc.). Indeed, within this study, only collaboration internal to the value chain was investigated. However, it could be interesting to also examine the role of collaboration with actors external to the chain on the value co-creation and capture potential of the chain members.

To conclude, further research is needed which expand the investigation of the role of business environment behind the unique consideration of environmental and behavioural uncertainty levels. Moreover, the development of a reliable operationalisation of these latter concepts is needed, as it has been observed a lack of agreement in the available literature on how to operationalise these constructs and include them in a study (Macher and Richman, 2008).

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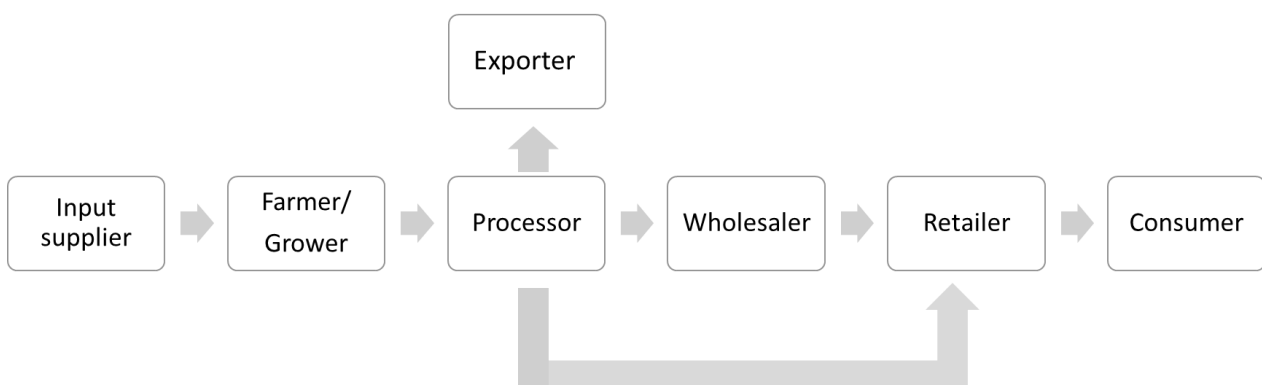
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Annexes

Annex 1. Interview Guide

Overview of the Value Chain (Background information to answer all the addressed RQs):

1. Could you give an overall description of the ____ value chain?
 - a. Who are the actors involved to deliver ____ products/services?
 - b. Which is the approximate number of input suppliers/ processors/ carver/ exporters/ wholesalers/ retailers involved?
 - c. Where are they located (New Zealand or abroad)?
 - d. Which are the main countries addressed by your value chain?
2. Has the current value chain structure in which you are involved changed in the last 5 years?
3. Why did it change?
 - a. What were the drivers for the above changes?
 - i. Were there changes in legislation/standards?
 - ii. Were there political changes?
 - iii. Were there technological changes?
 - iv. Were there social changes?
 - v. Were there economic changes?
4. What was the impact of this change?



Overview of the Value co-creation and capture process (RQ1):

1. Which is the value created by the existence of the ____ value chain? In other words, why it is important for the different actors working in the ____ industry to come together rather than work individually?
 - a. Do they achieve higher returns in terms of tangible value is created for your company by the other actors in the chain? (i.e. goods/semi-finished goods/services)

- b. Which forms of intangible value is created for your company by the other actors in the chain? (i.e. loyalty, enhanced brand image, etc.)
 - c. Which forms of knowledge value is created for your company by the other actors in the chain (i.e. shared planning information, technical knowledge, etc.)?
 - d. Is there any other relevant value category that I did not mention?
2. What value capture means within your organization? How are the created tangible, intangible and knowledge values shared among the chain actors?
3. What are the main challenges to reach a higher level of value co-creation and capture with respects to your competitors?

Value	Input supplier	Farmers/ Growers	Processor	Wholesaler	Exporter	Retailer	Consumer
Tangible							
Goods							
Services							
Revenues							
Others							
Intangible							
Customer's loyalty							
Image enhancement							
Co-branding							
Others							
Knowledge							
Planning knowledge							
Process Knowledge							
Strategic information							
Others							

Overview of Collaboration activities (RQ3):

1. What are the forms of collaboration within the ____ value chain?
2. Who has initiated it?
3. Which were the main reasons for initiating collaboration activities with other chain actors?
 - a. To reach a higher level of value co-creation and capture?
 - b. To overcome constraints imposed by certain actors by its relative characteristics (i.e. size, role, relationship history)?
 - c. To deal with industrial requirements or/and characteristics (Uncertainty, weak legislation, etc.)?
 - d. Others?
4. How does collaboration look like within the ____ value chain?

- a. Is it about information sharing? Which are the information shared among the actors?
Are they mainly product, process or planning information? A combination of the three?
Or others?
- b. Is it about joint planning and operations?
Who initiates the decision making about operations (daily activities) and planning (strategic long-term decisions)?
Who ratifies the decisions?
Who implements the decisions?
Who monitors the decisions?
Who is involved in the decision-making process and to what extent?
5. Does collaboration in the ____ value chain includes the establishment of incentive alignment schemes adopted, if any, to motivate all the actors to respect the chain common goals (i.e. pay-per-effort, pay-per-performance, etc.)?
6. Are there other forms of collaboration adopted?
7. Which are the main benefits arising from these collaboration activities in terms of value co-creation?
8. Which are the main problems encountered by the chain actors when collaborating?
 - a. Information leakage?
 - b. Increased dependence?
 - c. Inequality feelings?
 - d. Incentive misalignment?
 - e. Others?

Overview of the value chain Governance forms (RQ4):

Governance as a structure (Network governance):

1. How are the relationships among the different actors in the ____ value chain governed/managed?
 - a. Are all the actors taking part in the value chain involved in its governance collectively and proportionally? Or is there a single organisation responsible for the whole network governance and, therefore, performing a leadership role?
 - b. Is the leading company part or not of the value chain?

Governance as a structure (Bilateral agreements):

1. How are the bilateral (among two consecutive actors) relationships managed?

- a. Which types of agreement are usually adopted between the different actors at the different stages of the chain?
- b. Spot-market contract? In other words, are the products and services transactions among you and the other chain actors solely based on price criteria?
- c. Verbal agreement? Are the products and services transactions among you and the other chain actors managed through the adoption of implicit norms based on the existence of long-lasting relationships?
- d. Formal written contract? Are the products and services transaction details specified in formalised and written contracts legally enforceable?
- e. Equity-based contract? Is one of the firms in the chain a stockholder of its partner while remaining legally independent from it (i.e. is there a JV)?
- f. Vertical integration? Are two or more successive stages in the production and distribution processes under common ownership and management of a single actor?

Governance as mechanisms (Formal vs Informal agreements):

- 1. Which type of coordination mechanisms are usually implied? Are they mainly formal agreements aiming at high level of control or more trust-based agreements? Or a combination of both?
- 2. Which are the specifications included in the formal agreements?
 - e. Price specifications?
 - f. Volume?
 - g. Quality?
 - h. Investments?
 - i. Others?
- 3. Who sets the specification of these agreements?
- 4. How do you believe these arrangements affect the degree of collaboration among the different chain actors?
- 5. How do you believe these arrangements affect the degree of value co-creation and capture of the chain?
- 6. Which is the nature of the trust-based agreements/coordination mechanisms adopted? Do they represent implicit social norms, conventions, shared cultures, others?

	Input supplier-Farmer	Farmer-Processor	Processor-Wholesaler	Processor-Exporter	Wholesaler-Retailer
Governance structure					
Spot-market					
Verbal agreement					
Formal contracts					
Equity-based contracts					
Vertical integration					

Overview of the Business Environment (RQ2):

Industry's uncertainty:

1. What are the main constraints of the ____ industry that prevents its actors from creating and capture value?
2. How do you believe that these industry's characteristics influence the governance structure the whole network?
3. How do you believe that these industry's characteristics influence the governance structure the bilateral relationships among the different chain actors?
4. How do you believe that these industry's characteristics influence the formal and informal governance coordination mechanisms adopted?
5. How do you believe that these industry's characteristics influence the collaboration activities that you described before?

Behavioural uncertainty:

1. What is the relationship history among the chain actors?
 - a. Which is the level of trust and commitment that has been established?
 - b. What do they mean with trust?

Annex 2. Research Invitation email

Email example 1

Dear X,

my name is Annalisa Achilli and I am contacting you at the suggestion of X.

Currently, I am in New Zealand to do my Thesis under the supervision of the professors Jacques Trienekens (Wageningen University, NL) and Caroline Saunders (Lincoln University, NZ) as in cc.

My research focuses on understanding:

- the current governance mechanisms adopted at the different stages of Greenlea beef-meat value chain (i.e. formal contracts/social norms/etc.) and
- the relationships among the value chain actors (i.e. collaboration/trust/information sharing/etc.).

I will be pleased to interview X to gain insights on the final part of the meat supply chain!

For example, interviewing the Sales Manager, the Managing Director and the Supply Chain Manager will help me to focus on the value chain structure, the operating environment characteristics, comparison with competing value chains; consumer wants etc.

In fact, I am mapping different types of New Zealand food supply chain to examine their potential for improvements in efficiency, opportunities to add value, to increase export returns etc. along the chains and within each internal link.

I will be back in Europe at the beginning of February and I will be available for either visiting your company or for a Skype call interview. Just let me know what will suit you best!

Lastly, I know that you are also collaborating with other meat companies from New Zealand (Silver Fern Farms, Kumanu, ...) and I was wondering about the possibility to get in contact with them through you, as I am looking for further case study to enrich my research.

Thank you for your help!

Best regards,
Annalisa Achilli
MSc Student
Wageningen University
The Netherlands

Email example 2

Dear X,

my name is Annalisa Achilli and I am writing to you at the suggestion of Karen from the Customer Service team.

Currently, I am in New Zealand to conduct a research under the supervision of the professors Jacques Trienekens (Wageningen University, NL) and Caroline Saunders (AERU Research Centre, NZ) as in cc.

I will be pleased to involve X in my study, as an outstanding representative of the New Zealand venison sector. I am collaborating with Schoonderwoerd Vlees and they introduce me to the reality of your company. I was especially impressed by your implementation of programmes like 'Silver Fern Farms Reserve Beef' as an example of an innovative strategy to link farmers to consumers through a better integrated supply chain. Indeed, this is exactly the focus of my study.

My research focuses on understanding:

- the current governance mechanisms adopted at the different stages of the meat supply chain (i.e. formal contracts/social norms/etc.) and
- the relationships between the meat supply chain actors (i.e. collaboration/trust/information sharing/etc.).

Therefore, after my study I could provide you with a map of your entire supply chain, opportunities for improvements in efficiency, opportunities to add value and to increase export returns. I have already interviewed Greenlea and it would be valuable to compare the beef and the venison sectors to investigate potential synergies.

Interviewing (for 1 hour) you as Supply Chain Manager together with the Sales Manager, the Managing Director, etc. will help me to focus on topics as your value chain structure, its operating environment characteristics, a comparison with the competing value chains, consumer wants.

Let me know if you could be interested and feel free to contact me at any time for further clarifications.

Thank you for the help you would like to provide me with!

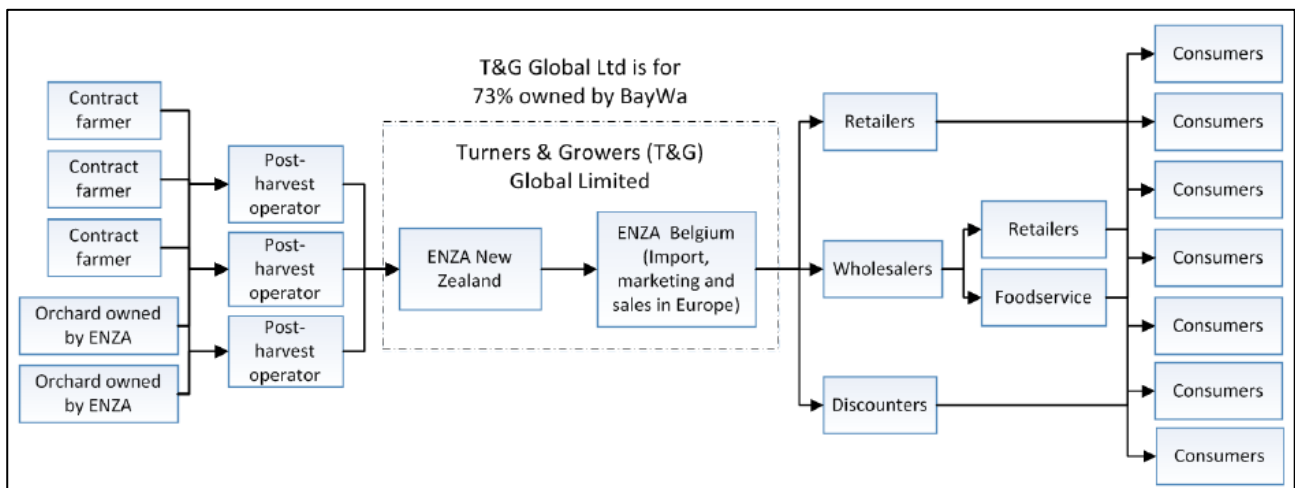
Best regards,
Annalisa Achilli
MSc Student
Wageningen University
The Netherlands

Annex 3. ENZA, Zespri, Firstlight Foods and Kumanu value chains

ENZA apple value chain

ENZA exports the two apple varieties Jazz and Envy apples for which it detains the plant variety rights, namely, these apples can be exported from New Zealand only by ENZA. Besides these varieties, Breaburn, Cox, Royal Gala, Granny Smith, Fuji, Gala, Pacific Rose, Pink Lady and Red Delicious apples are exported by as well. The ENZA value chain comprises autonomous and contracted growers. ENZA also possesses its own apple plantations. Further down in the chain, 37 post-harvest operators (i.e. pack houses and cool storage facilities) receive the apples supplied by ENZA orchards and its contracted and non-contracted growers. ENZA owns a subsidiary in Belgium responsible for the marketing activities in The Netherlands and for the apples import in Europe. The apples are sold to local wholesalers, retailers and discounters (Van Velzen, 2016).

Figure 12 – ENZA apple value chain structure



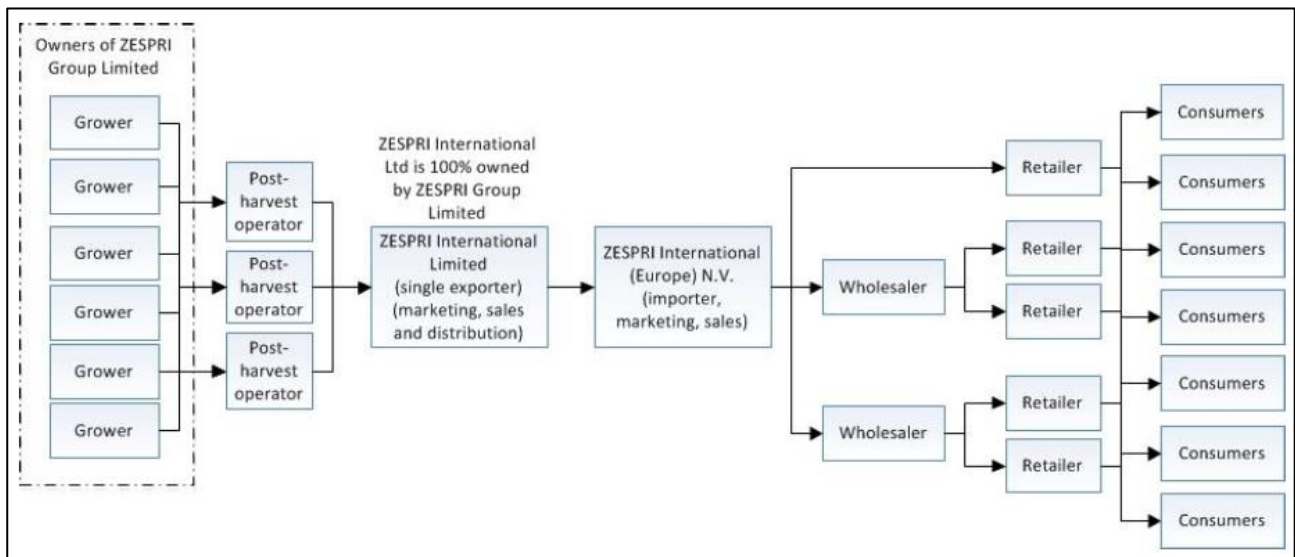
Ownership structure ►

Source: Van Velzen (2016)

Zespri kiwifruit value chain

Zespri kiwifruit value chain is made of 2500 growers with shareholding in Zespri. The latter are supplying 50 post-harvest operators, who operate pack houses and cool storage facilities and supply the processed kiwifruit to the Zespri marketing organisation. Zespri represents the unique company with the right to export kiwifruits from New Zealand to the rest of the world, Australia excluded. Indeed, the kiwifruit industry is characterised by a single desk structure. Moreover, Zespri Europe oversees the kiwifruit import and the local inventory management. Zespri Europe also sells the kiwifruit to local wholesalers and retailers (Van Velzen, 2016).

Figure 13 – Zespri kiwifruit value chain



Ownership structure -----►

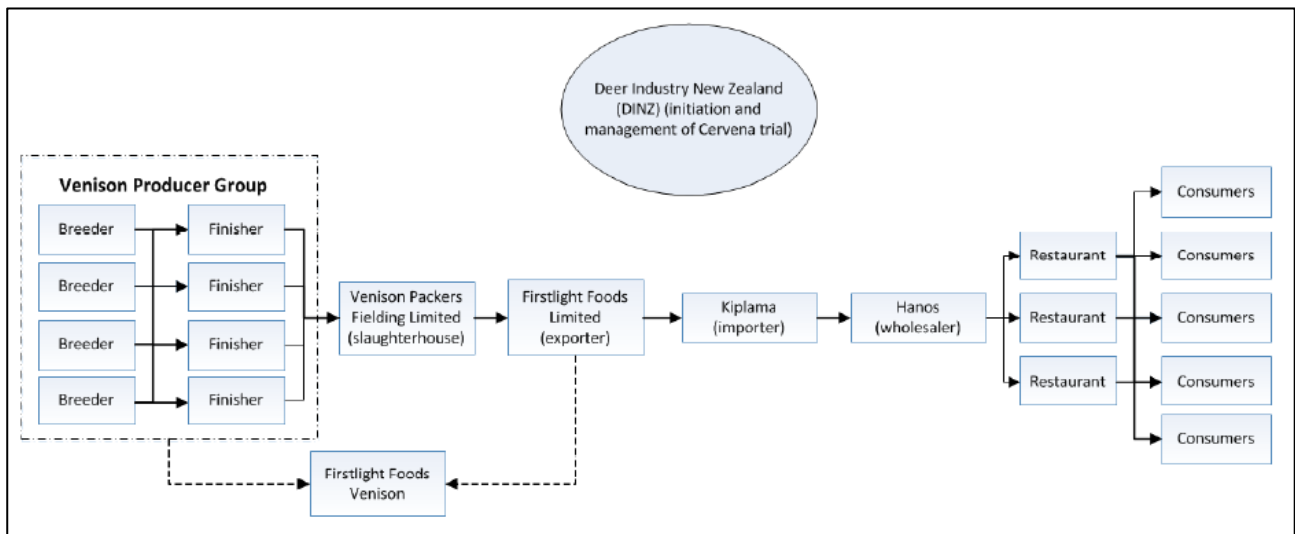
Source: Van Velzen (2016)

Firstlight Foods Cervena venison value chain

Firstlight Foods Cervena venison value chain is composed of 21 deer Farmers, which are both breeders and finishers and constitute a producer group that does not represent a formal cooperative. These 21 Farmers own 50 per cent of Firstlight Venison, while the other 50 per cent is retained by Firstlight Foods. Further down in the chain, it can be found a unique and independent slaughterhouse named Venison Packers Fielding Limited. Kiplama is the European venison Importer, which supplies Hanos. This last is a Dutch wholesaler for restaurants (Van Velzen, 2016).

It has to be specified that Firstlight Venison contracts Firstlight Foods for simplifying the processing, logistics and marketing activities and the venison export. In the Dutch market, Firstlight Foods is experimenting the Cervena trial that was started and financed by the Deer Industry New Zealand (DINZ), an industry body funded by the deer Farmers and the exporters of venison for being in charge of research, marketing and trade issues. Moreover, the DINZ administers Cervena Trust Limited by supporting the establishment of the trademark usage standards, the Cervena promotional strategy decisions and funding. To specify, Cervena is a registered trademark, owned by the Cervena Trust Limited, an autonomous group creating the rules for the use of Cervena trademark and also licensing the individual companies for the use of this trademark. The Cervena trial aims at increasing the venison sales in Europe during the local spring and summer seasons. Indeed, during these periods New Zealand deer Farmers finish the largest part of their cattle. Therefore, through this strategy the venison sale period is prolonged (Van Velzen, 2016).

Figure 14 – Firstlight Foods Cervena value chain



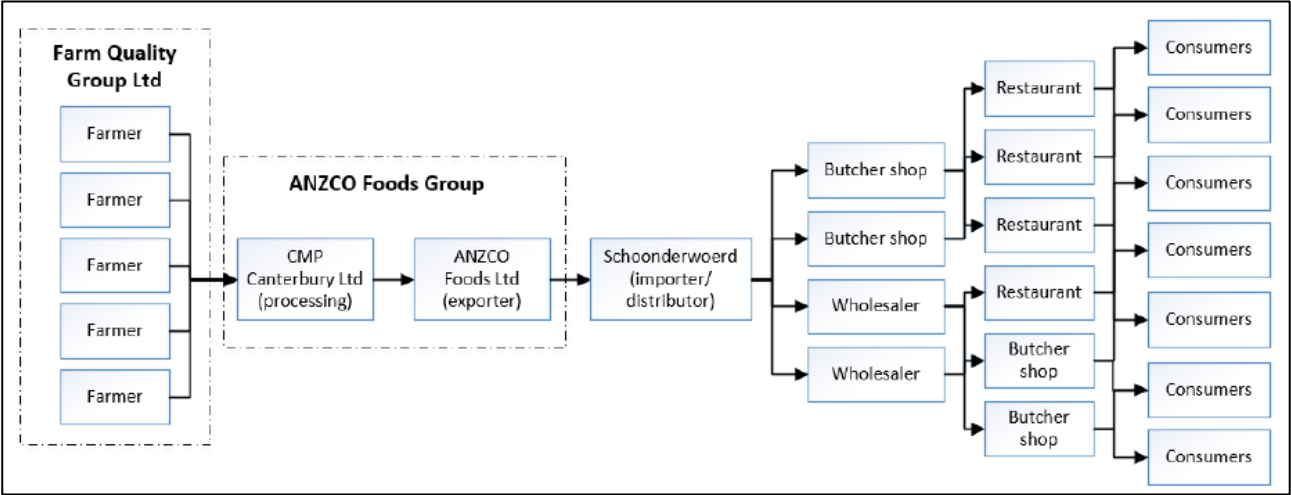
Ownership structure ----->

Source: Van Velzen (2016)

Kumanu lamb value chain

This value chain is made of 25 sheep Farmers (including both breeders and finishers) constituting the Farm Quality Group Limited whose strategy focuses on animal welfare, social responsibility, environmental responsibility and on supplying consistently high-quality meat. Further down in the chain there is ANZCO Foods Group, which is a large New Zealand meat processing company supplied by the sheep Farmers. This last is in charge of the lamb processing and export to the Netherlands (the unique country where Kumanu lamb is sold). Schoonderwoerd Vlees represents the only Dutch Importer of Kumanu lamb and receives the Kumanu lamb by ANZO Europe. Schoonderwoerd Vlees sells the Kumanu products to higher-end butcher shops and wholesalers, which in their turn supply higher-end restaurants and butcher shops.

Figure 15 – Kumanu lamb value chain



Ownership structure ----->

Source: Van Velzen (2016)