

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

GOVERNANCE STRUCTURE AND SUPPLY CHAIN MANAGEMENT

PRACTICES IN THE DAIRY VALUE CHAIN:

A comparative study between New Zealand and Brazil

A thesis presented in partial fulfilment of the requirements for the degree of
Master of Logistics and Supply Chain Management

at Massey University, Auckland,
New Zealand.

Rafael V. B. Junqueira

2010

ABSTRACT

The modifications that have been occurring in the world marketplace, which translate to a higher level of competition between organisations, have required a rearrangement in how various economic sectors manage their production activities. The new way of thinking about organisational positioning takes into consideration concepts of integration and collaboration, where the quality of the relationships between business partners assumes a critical importance. The dairy industry is of extreme importance to the economies of both New Zealand and Brazil. In New Zealand it contributes to about one quarter of the export earnings of the country, while in Brazil it is an important source of income and employment. The purpose of this exploratory study was to better understand the dairy industries in these two countries and to investigate how governance structures and supply chain management practices may influence the relationship between dairy farmers and their co-operative. A multiple case study approach was used, investigating two dairy co-operatives: Fonterra Group, in New Zealand, and Cooperativa Itambé, in Brazil. The results indicated that the dairy sectors in New Zealand and Brazil have different characteristics and levels of maturity. In addition, it was revealed that governance structures and supply chain management practices can have a significant effect on the relationship between dairy farmers and their co-operative by contributing to improving the integration of milk suppliers and the company while developing in farmer suppliers a sense of trust and commitment to the organisation.

Keywords: dairy value chain, governance structure, supply chain management, dairy co-operatives.

ACKNOWLEDGMENTS

I extend my sincere gratitude to all those who became directly and indirectly involved in completing this work. Firstly, I would like to thank my family, whose encouragement through the entire journey was vital. Thank you for providing a safe port during the difficult moments along the way.

I would like to thank my supervisor, Alan Win, and co-supervisor, Norman Marr, from the Department of Logistics and Supply Chain Management, for their academic supervision, encouragement and positive attitude throughout the entire research endeavour. Alan, I am deeply grateful to you for sharing your knowledge and time with me — two expensive factors.

The financial assistance received from the NZAID Programme is gratefully acknowledged. In addition, the important support during the preliminary stage of this project provided by: Pedro Arcuri from Embrapa Labex Europe; Alberto Duque Portugal from Minas Gerais' Secretary for Science, Technology and State Universities; and Paulo do Carmo Martins, Paulo Henrique Fonseca da Silva, and Suzana Quinet Bastos from Federal University of Juiz de Fora.

I would like to acknowledge and thank Fonterra Co-operative Group and Cooperative Itambé for their cooperation, time and help with this project. My gratitude goes especially to Mark Thomas, Robyn Paul, Tim Deane and Phillip Palmer from Fonterra and Jacques Gontijo and Paulo Martins from Itambé for enabling this research to be conducted. Thank you for your precious time.

I would like to express my gratitude to the New Zealand and Brazilian dairy farmers who participated in this research. Thank you for receiving me so well on your farms and for sharing with me your experience and wisdom. Special thanks to Mike Daniel, Murray Pedley, Joshua Wheeler and Henrique de Sousa Saldanha for facilitating my contact with farmers.

Finally, my admiration and appreciation are extended to DairyNZ and Embrapa Dairy Cattle, which provided through their researchers the opportunity to improve my understanding of the world dairy industry, especially in New Zealand and Brazil.

TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGMENTS.....	iii
TABLE OF CONTENTS.....	iv
LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
CHAPTER 1. INTRODUCTION	1
1.1 RESEARCH CONTEXT.....	1
1.2 RESEARCH PURPOSE AND QUESTION.....	3
1.3 THESIS STRUCTURE.....	4
CHAPTER 2. LITERATURE REVIEW.....	6
2.1 INTRODUCTION	6
2.2 VALUE CHAIN	6
2.2.1 The value chain concept.....	7
2.2.2 Dairy value chain	14
2.3 GOVERNANCE STRUCTURE	16
2.3.1 Value chain governance	17
2.3.2 Corporate governance	19
2.4 SUPPLY CHAIN MANAGEMENT.....	22
2.4.1 Emergence of supply chain management	23
2.4.2 Supply chain integration	27
2.4.3 Supply chain management practices.....	30
2.5 CO-OPERATIVES	34
2.5.1 Agricultural co-operatives	36
2.5.2 Agricultural co-operatives in New Zealand	38
2.5.3 Agricultural co-operatives in Brazil	39
2.6 SUMMARY.....	40
CHAPTER 3. THE CONTEXTUAL ENVIRONMENT – DAIRY INDUSTRY	42
3.1 INTRODUCTION	42
3.2 DAIRY INDUSTRY IN NEW ZEALAND – AN OVERVIEW	43
3.2.1 Milk production.....	43
3.2.2 Dairy processing companies.....	46
3.3 DAIRY INDUSTRY IN BRAZIL – AN OVERVIEW.....	49
3.3.1 Milk production.....	49
3.3.2 Dairy processing companies.....	52
3.4 SUMMARY.....	56

CHAPTER 4. DESIGN AND METHOD OF RESEARCH	57
4.1 INTRODUCTION	57
4.2 RESEARCH METHOD	57
4.3 RESEARCH DESIGN	59
4.3.1 Case study research	59
4.3.2 Ensuring quality of case study research	61
4.3.3 Selection of case studies	62
4.4 DATA COLLECTION	63
4.5 DATA ANALYSIS	66
4.6 SUMMARY	67
CHAPTER 5. CASE STUDIES	68
5.1 INTRODUCTION	68
5.2 FONTERRA CO-OPERATIVE GROUP	68
5.2.1 Company overview	68
5.2.2 History and developments	72
5.2.3 Ownership structure	76
5.2.4 Governance structure	79
5.2.4.1 <i>Board of directors</i>	80
5.2.4.2 <i>Shareholders' council</i>	82
5.2.4.3 <i>Executive management</i>	84
5.2.5 Supply chain management practices	85
5.2.5.1 <i>Co-operative and farmers interaction</i>	85
5.2.5.2 <i>Milk payment mechanism</i>	93
5.2.5.3 <i>Supplier selection and assessment</i>	95
5.2.6 Relationship between farmers and co-operative	96
5.3 COOPERATIVA ITAMBÉ	98
5.3.1 Company overview	98
5.3.2 History and developments	101
5.3.3 Ownership structure	103
5.3.4 Governance structure	105
5.3.4.1 <i>Board of directors</i>	106
5.3.4.2 <i>Executive directors</i>	107
5.3.4.3 <i>Fiscal board</i>	108
5.3.4.4 <i>General assembly</i>	108
5.3.5 Supply chain management practices	110
5.3.5.1 <i>Co-operative and farmers interaction</i>	110
5.3.5.2 <i>Milk payment mechanism</i>	116
5.3.5.3 <i>Supplier selection and assessment</i>	118
5.3.6 Relationship between farmers and co-operative	119
5.4 SUMMARY	120

CHAPTER 6. CROSS-CASE DISCUSSION	121
6.1 INTRODUCTION	121
6.2 OWNERSHIP STRUCTURE.....	121
6.3 GOVERNANCE STRUCTURE	123
6.4 SUPPLY CHAIN MANAGEMENT PRACTICES	124
6.4.1 Co-operative and farmers interaction	125
6.4.2 Milk payment mechanism	129
6.4.3 Supplier selection and assessment	131
6.5 RELATIONSHIP BETWEEN FARMERS AND CO-OPERATIVE	132
6.6 SUMMARY	133
 CHAPTER 7. CONCLUSION.....	 134
7.1 RESEARCH CONCLUSIONS.....	134
7.2 LIMITATIONS OF THIS STUDY	138
7.3 DIRECTIONS FOR FUTURE RESEARCH	138
 REFERENCES.....	 140

LIST OF FIGURES

Figure 2.1 <i>Porter's value chain model</i>	8
Figure 2.2 <i>Basic agri-food value chain</i>	11
Figure 2.3 <i>Dairy value chain</i>	14
Figure 2.4 <i>The board and management</i>	20
Figure 2.5 <i>The basic board perspectives and processes</i>	21
Figure 2.6 <i>Supply chain management antecedents and consequences</i>	25
Figure 2.7 <i>Supply chain management framework: elements and key decisions</i>	28
Figure 3.1 <i>Seasonal pattern of New Zealand's milk production, 2006/07</i>	44
Figure 3.2 <i>Regional distribution of dairy cows in New Zealand, 2008/09</i>	44
Figure 3.3 <i>New Zealand's milk production, 2000-2010 in millions of litres</i>	45
Figure 3.4 <i>Number of cows and milk solids production per cow in New Zealand, 1994-2009</i>	46
Figure 3.5 <i>New Zealand dairy export values by key market destination, 2009</i>	49
Figure 3.6 <i>Regional distribution of milk production in Brazil, 2007</i>	51
Figure 3.7 <i>Brazil's milk production, 1999-2008 in millions of litres</i>	52
Figure 3.8 <i>Average farm-gate milk price in Brazil, 2006-2010 in BRL/litre</i>	55
Figure 3.9 <i>Brazilian dairy trade, 2000-2009 in USD million</i>	55
Figure 4.1 <i>Interview framework</i>	64
Figure 5.1 <i>Emergence of Fonterra's trade flows</i>	73
Figure 5.2 <i>Fonterra's governance structure</i>	79
Figure 5.3 <i>Itambé's governance structure</i>	105

LIST OF TABLES

Table 2.1 <i>Strategic success factors and SCM practices</i>	31
Table 3.1 <i>Brazil's top 10 dairy processors by milk intake, 2009</i>	54
Table 4.1 <i>Case studies' interview participants</i>	65
Table 5.1 <i>Fonterra's business division</i>	70
Table 5.2 <i>Fonterra's strategic alliances</i>	74
Table 5.3 <i>Itambé's business division</i>	100

CHAPTER ONE

INTRODUCTION

1.1 RESEARCH CONTEXT

The modifications that have been occurring in the world marketplace, which translate to a higher level of competition between organisations, have required a rearrangement in how various economic sectors manage their production activities. The new way of thinking about organisational positioning takes into consideration concepts of integration and collaboration. In that context, management of the value chain assumes great importance, requiring a different business model, in which improved profits arise from cooperation rather than an ability to play the market or exercise power over supply chain partners.

The globalisation of the world economy, driven by trade liberalisation and rising incomes in emerging countries, offers to corporations the opportunity to increase revenue and profits by exploring regions that were difficult to access before. However, with these potential benefits also come new challenges such as increased competition from foreign companies, understanding consumer preferences in multiple markets, dealing with exchange rate risk, integrating worldwide supply chains, and risks posed by the domestic policies of countries around the globe (Stock & Lambert, 2001; Trechter & Murray-Prior, 2003). Nevertheless, as Ballou (2006) stated, the organisations that have a well-coordinated and integrated value chain are better positioned to take advantage of the opportunities offered by globalisation and to mitigate the risks that it creates.

A key issue for value chain performance is the quality of the relationship between business partners (Fischer, Gonzalez, Henschion, & Leat, 2007). Huemer (2006) suggests that managing supply relationships is a strategic task that can contribute to the competitiveness and profitability of both individual firms and entire chains. Trends in chain relationships reveal the necessity to increase cooperation and trust among supply chain partners in order to enhance efficiency and effectiveness. Long-term relationships, based on a win-win attitude, are replacing the traditional adversarial relationships.

A growing recognition of the competitive advantage which can be gained through improving coordination in the value chain is the starting point for studies on governance and supply chain management. As business models increase in complexity, forms of governance structure and supply chain management practices become more significant; these are at the heart of our understanding of how companies can enhance integration and collaboration within the value chain. For this research project, governance structure is understood as the configuration that ensures that decisions are made that lead to long-term, sustainable value for the company and its shareholders. Supply chain management practices, are understood to be the set of activities undertaken by the organisation to promote effective management of its supply chain (Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2006).

New Zealand's and Brazil's dairy sectors are important contributors to their country's economy. As regards New Zealand, the dairy industry is responsible for about one quarter of the export earnings of the country and approximately 7 per cent of its gross domestic product (GDP); in addition, the country is the world's largest exporter of dairy products (Gray & Heron, 2010). In relation to Brazil, the importance of the dairy sector is unquestionable (Martins, 2004). Zoccal and Carneiro (2008) suggest that just the dairy primary sector involves nearly five million people, and 1.2 million dairy farmers produce about 27 billion litres of milk a year, revealing the sector's significance not only from an economic aspect, but also on the social side.

Within the dairy industry in both countries, farmer-owned co-operatives play an important role. The New Zealand dairy industry has a co-operative form of organisation as the industry's cornerstone. Since the creation of the first dairy co-operative in 1871, on the Otago Peninsula, the sector has been structured mainly around co-operative organisations, which are responsible for processing almost the entire milk production of the country (Donoso, 2003). In Brazil, dairy co-operatives also have critical importance. Chaddad (2007a) suggests that by the end of the 1980s co-operatives were collecting about 60 per cent of the milk produced in the country. However, following the deregulation of dairy markets and international trade liberalisation in the early 1990s, dairy co-operatives were exposed to increased competition from imports and multinational companies, industry consolidation, and the increased bargaining power of retailers. As a result, co-operatives' milk procurement market share declined, representing nowadays approximately 40 per cent of total milk delivered.

Due to the significance of the dairy sector in both countries and the new challenges imposed by today's business environment, where organisations need to have appropriate governance structures and supply chain management practices to cope with the fierce competition, this research focused on two key co-operatives, the largest dairy co-operative from each of New Zealand and Brazil, aiming for a better understanding of their governance structures and supply chain management practices, and analysing how these factors may affect the relationship between the co-operative and its members — farmer shareholders.

1.2 RESEARCH PURPOSE AND QUESTION

Many scholars have conducted studies on governance and supply chain management in the agri-food industry (Bijman, 2002; Gellynck & Molnár, 2009; Taylor, 2006). Likewise, some researchers have focused specifically on the dairy value chain (Bankuti, 2007; Conforte, Garnevska, Kilgour, Locke, & Scrimgeour, 2008; Lowe & Gereffi, 2009; Painter, 2007; Schlecht & Spiller, 2009). However, although elucidative, none of these researches focused on either the governance structures and supply chain management practices adopted by a single company to enhance coordination in its value chain or on how these may affect the relationship between the organisation and its suppliers.

A co-operative, which can be defined as a producer organisation that is user-owned and user-controlled to benefit the user, has unique characteristics (Cook, 1997). The involvement of its members in management decisions is a critical difference from other forms of business. Since its suppliers are also the owners, the relationship between the co-operative and its supplier shareholders is a vital aspect for its success. Therefore, an efficient and effective integration between suppliers and co-operative assumes crucial importance.

New Zealand's and Brazil's dairy industries have different characteristics and levels of maturity. On one hand there is New Zealand which is the world's largest dairy exporter, having a highly consolidated industry, producing about 16 billion litres of milk a year from approximately 12,000 dairy farmers. On the other hand there is Brazil, which was a large importer of dairy products in the 1990s and started to participate more actively as a dairy exporter early this decade, having a large number

of dairy processing companies, and producing about 27 billion litres of milk from approximately 1.2 million dairy farmers. As can be noted, the countries have different characteristics regarding the dairy industry, which is an indication that milk processing companies have different ways to manage their value chains.

Based on the research gap in the literature, the importance that integration and collaboration have on co-operative organisations and the different features of New Zealand's and Brazil's dairy industries, this research project sought to address the following question:

How do governance structures and supply chain management practices affect the relationship between dairy farmers and their co-operative?

To better understand the governance structures and supply chain management practices present in the dairy value chains in New Zealand and Brazil, thereby making possible critical observations of how these affect the relationship between the co-operative and farmer suppliers, the following specific objectives guided this research:

1. Review the current structure of the dairy industry in New Zealand and Brazil through an assessment of their internal structural characteristics.
2. Describe the governance structures and supply chain management practices present in the dairy value chain of a New Zealand-based co-operative and a Brazilian-based co-operative.
3. Analyse and compare the two value chains within the framework of current theory in order to yield insights regarding the relationship between dairy farmers and their co-operative.

1.3 THESIS STRUCTURE

This thesis is organised in seven chapters. This first Chapter provides the background of the research, offering a brief overview of the selected area of study and discussing the purpose for conducting this scientific enquiry.

A comprehensive literature review follows in the next Chapter. The literature review was constructed under four main areas: 1) Value Chain; 2) Governance Structure; 3) Supply Chain Management; 4) Co-operatives.

Chapter Three begins by laying out the contextual environment of the dairy industry in New Zealand and Brazil, and looks at the milk supply situation and the main dairy companies present in each country. Chapter Four describes the research techniques and methods that guided this research endeavour, identifying the data sources, data collection procedure and method of analysis.

The results and findings of this study are presented in Chapters Five and Six. Chapter Five presents the individual case reports, which are the outcome of analysis of vast amounts of data collected over the research period. Chapter Six carries a cross-case analysis of the two studied co-operatives focusing on their governance structures, supply chain management practices and how these may affect the co-operative's relationship with farmer shareholders.

The final chapter, Chapter Seven, summarises the results of the study and draws conclusions based on the observed findings. Limitations of the study and suggestions for future research are then addressed.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

As the world grows together the way business is conducted is changing. The 'relational view' of competitiveness has replaced the more traditional resource-based or market-based views which see business success as a function of access to crucial resources or as a result of exercising market power. In a networked economy, however, companies that form smart partnerships, strategic alliances, and efficiently coordinate the value chains will have a competitive edge (Fischer, 2009a).

Many scholars have explored the vast fields of governance, supply chain management and buyer-supplier relationships. This chapter seeks to introduce many of the concepts that are necessary to better understand the modifications that have been occurring in the world marketplace and within organisations. In the first part of this chapter, Section 2.2, value chain analysis is examined. Next, governance structures are investigated, where the focus is on value chain governance and corporate governance. Then, in Section 2.4 supply chain management emergence and practices are analysed. Finally, in Section 2.5 the co-operative form of business is studied.

2.2 VALUE CHAIN

The world economy has changed in significant ways during the past two decades, especially in the areas of international trade and industrial organisation. Two important new features of the contemporary economy are the globalisation of production and trade. In this new scenario, corporate strategy assumes a vital role in leading organisations to a brighter future.

Normann and Ramirez (2000) assert that corporate strategy is the art of creating value. Strategy provides the intellectual frameworks, conceptual models and governing ideas that allow companies to identify opportunities for bringing value to customers and for delivering that value at a profit. In this respect, strategy is the way organisations define their business and links with two resources that have

vital importance in today's economy: knowledge and relationships or an organisation's competencies and its interactions with stakeholders.

Managing supply relationships is a strategic task that can contribute to the competitiveness and profitability of both individual firms and entire chains. But despite the acknowledged importance of supply relationships, little is known about the determinants of success and failure (Huemer, 2006). Reports that the U.S. food industry alone is estimated to waste US\$30 billion annually through poor supply coordination illustrate a significant potential for improvement (Fisher, 1997).

Porter's (1985) well-known Value Chain Model and the corresponding notion of value systems have profoundly influenced the perception of how supply relationships work. His model has shaped managerial thinking about such strategic issues as value creation, coordination and positioning (Huemer, 2006).

Another significant body of research on the value chain is called the Global Value Chain framework. This stream of research describes the value chain as a full range of activities that firms and workers do to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer.

Although there are different frameworks for analysing value chains, they all share the same idea, which is to better understand the activities involved within the chain, seeking for innovative ways — strategies — to streamline the entire network.

2.2.1 THE VALUE CHAIN CONCEPT

The value chain concept can be divided into two main streams of literature: one based on Porter's Value Chain Model and other known as Global Value Chains (GVC). The first incarnation of GVC analysis was the global commodity chains framework (Gereffi & Korzeniewicz, 1994). The concept of 'value' was incorporated into the framework when researchers started to use the analysis to show where value is captured within a particular industry (Gereffi & Christian, 2010).

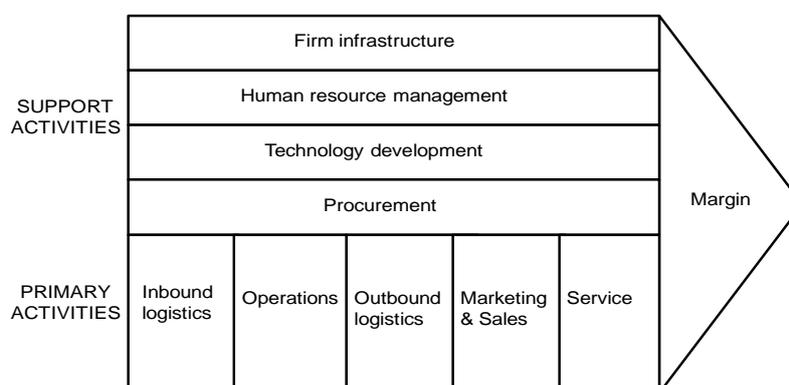
Value chain analyses are a key framework for understanding how a product moves from the producer to the customer. The value chain perspective provides an important means to understand the business-business relationships, mechanisms for increasing efficiency, and ways to enable a business to increase productivity and add value (J.E. Austin Associates, 2007).

Michael Porter, in his book *Competitive Advantage: Creating and sustaining superior performance* (1985), introduced the value chain concept. He suggests that the value chain is a systematic approach to examining the development of competitive advantage. Likewise, that the value chain consists of a series of activities that create and build value.

Porter (2004) claims that value chain analysis is a basic tool for diagnosing competitive advantage and finding ways to create and sustain it over time. The value chain is defined as the full range of activities required to bring a product or service from conception, through the different phases of production, up to the point of delivery to customers. Porter (1985) uses the terms value chain and value system to discuss company strategies in the management of relationships with other organisations.

To better understand the activities through which a firm develops competitive advantage and creates shareholder value, Porter (1985) separates the business system into a series of value-generating activities. These activities were found to be common to a wide range of firms. Porter (1985) classifies these activities in two categories: primary and support activities, as shown in Figure 2.1.

Figure 2.1 Porter's value chain model.



Source: Porter (1985).

The ultimate goal of these business activities is to offer to customers a level of value that exceeds the cost of the activities involved, thereby resulting in a profit margin. Porter (1985) describes the following as primary value chain activities:

- **Inbound logistics:** activities associated with receiving, storing and disseminating inputs to the product, such as material handling, warehousing, inventory control, vehicle scheduling and returns to suppliers.
- **Operations:** activities associated with transforming inputs into the final product form, such as machining, packaging, assembly, equipment maintenance, testing, printing and facility operations.
- **Outbound logistics:** activities associated with collecting, storing and physically distributing the product to buyers, such as finished goods warehousing, material handling, delivery vehicle operation, order processing and scheduling.
- **Marketing & Sales:** activities associated with providing a means by which buyers can purchase the product and inducing them to do so, such as advertising, promotion, sales force, quoting, channel selection, channel relations and pricing.
- **Service:** activities associated with providing services to enhance or maintain the value of the product, such as installation, repair, training, parts supply and product adjustment.

These primary activities are assisted by key activities classified as support activities. The support activities are divided into four generic categories:

- **Procurement:** refers to the function of purchasing inputs such as raw materials, supplies and other consumable items as well as assets such as machinery, office equipment and buildings.
- **Technology development:** consists of a range of activities that can be broadly grouped into efforts to improve the product and the process and technologies to support value-creating activities.

- **Human resource management:** consists of activities involved in the recruiting, hiring, training, development and compensation of all types of personnel.
- **Firm infrastructure:** consists of a number of activities including general management, planning, finance, accounting, legal, government affairs and quality management. Infrastructure usually supports the company's entire chain and not individual activities.

Although value activities are the building blocks of competitive advantage, the value chain is not a collection of independent activities but a system of interdependent activities. Value activities are related by linkages within the value chain. Linkages are relationships between the way one value activity is performed and the cost or performance of another (Porter, 2004). Understanding the linkages within the value chain is crucial to creating a competitive advantage.

In addition, linkages exist not only within a firm's value chain but between a firm's chain and the value chains of suppliers and customers. These linkages, which Porter (1985) terms vertical linkages, are similar to the linkages within the value chain — the way supplier activities are performed affects the cost or performance of a firm's activities (and vice versa). These vertical linkages provide opportunities for the organisation to enhance its efficiency by collaborating with suppliers.

Porter (2004) suggests that it is often possible to benefit both the organisation and suppliers by influencing the configuration of suppliers' value chain to jointly optimise the performance activities, or by improving coordination between a company's and supplier's chain. The focus should extend beyond the organisation's boundaries.

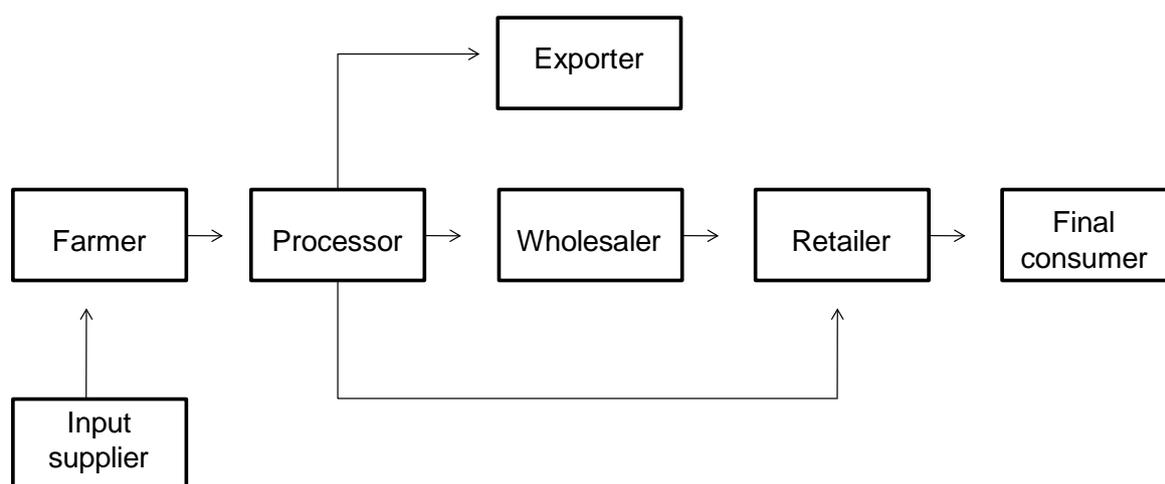
Another theoretical framework on the value chain field is known as Global Value Chains (GVC). GVC research draws on three bodies of literature — transactions cost economics, production networks, and technological capability and firm-level learning — to examine the actors and mechanisms that shape and transform global economic processes and various types of inter-firm relationships (Gereffi, Humphrey, & Sturgeon, 2005). Likewise, it seeks to identify why and how an industry is globally organised, how local economic processes are conditioned by global arrangements, and where change is most likely to happen (Gereffi & Kaplinsky, 2001).

Gibbon and Ponte (2008) suggest that GVC analysis postulates that the global economy can be usefully understood as a combination of discrete, product-specific 'value chains' rather than of liberalised markets. In these value chains, distinct firms are linked in internationally dispersed but integrated systems of input supply, trade, production and final marketing.

This school of thought in accordance with Porter's model believes that activities that comprise a value chain can be contained within a single firm or divided among different firms. Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas (Global Value Chains, 2010).

In the agri-food context, a value chain is made up of the activities of a group of economic agents including suppliers to producers, processors to exporters and buyers, all engaged in the activities required to bring a single agriculture or livestock product from its conception to its end use — 'from farm to fork'. In other words, it is a chain of economic agents collaborating to achieve a more rewarding position in the marketplace (Figure 2.2).

Figure 2.2 Basic agri-food value chain.



Source: Adapted from Gereffi & Lee (2009).

Kaplinsky and Morris (2001) indicate that in this era of rapid globalisation there are three main sets of reasons why value chain analysis is important. They are:

- I. With the growing international dispersion of the production of components, systemic competitiveness has become increasingly important.
- II. Efficiency in production is only a necessary condition for successfully penetrating global markets.
- III. Entry into global markets which allow for sustained income growth — that is, making the best of globalisation — requires an understanding of dynamic factors within the entire value chain.

Value chain analysis plays a key role in understanding the need and scope for systemic competitiveness. The analysis and identification of core competencies lead an organisation to outsource those functions where it has no distinctive competencies. Mapping the flow of inputs — goods and services — in the production chain allows each firm to determine who else's behaviour plays an important role in its success. Then, in those cases where the firm does not internalise much or most of the value chain in its own operations, its own efforts to upgrade and achieve efficiency has a small effect. The same challenge is true for national or regional economic management — upgrading the performance of individual firms in a region may have only a small impact if they are embedded in a sea of inefficiency.

Kaplinsky and Morris (2001) suggest that the second reason why value chain analysis is important is that it helps in understanding the advantages and disadvantages of firms and countries specialising in certain activities, and why the way in which producers are connected to final markets may influence their ability to gain from participating in global markets. As more and more organisations and regions improved their capabilities in the post-war period, particularly in recent decades, low-cost sources of supply grew for buyers procuring on a global stage, thus the focus has extended beyond the conventional boundaries.

The third major reason why value chain analysis is important is that it helps to explain the distribution of benefits, particularly income, to those participating in the global economy. This makes it easier to identify the policies which can be implemented to enable individual producers and countries to increase their share of these gains. Kaplinsky and Morris (2001) point out that this is an especially

topical issue and has captured the attention of a wide variety of parties. Invariably the debate is polarised between two views – globalisation is good for the poor or globalisation is harmful for the poor. Yet this is a too simplistic perspective, since it is less a matter of globalisation being intrinsically good or bad, rather how producers and countries insert themselves in the global economy.

The GVC model analyses the flows of resources, materials and information within the chain of activities that go toward the production of particular products. Furthermore, it pays particular attention to linkages between different agents, how their activities are coordinated, and the needs of final consumers (Gereffi et al., 2005; Gibbon, Bair, & Ponte, 2008). Some key concepts of the GVC approach are described below.

- **Upgrading and innovation:** involves changes in the nature and mix of activities in terms of both technological capability and market access. Upgrading may refer to processes, products or functions or chain upgrading (moving to a new chain).
- **Coordination and alignment:** relates to the need to streamline flow and capacity utilisation. Increased information flows, monitoring and logistical technology enable alignment. Lack of mutual trust by chain participants, awareness of the benefits of tightly aligned chains, willingness to accept a collaborative business approach and commitment to invest in infrastructure are illustrative of barriers to alignment.
- **Entry barriers:** are the surplus returns arising from design, production and marketing coordination, which arise due to possession of scarce attributes that are not accessible to others. The circumstances that create differential access for one firm or chain leading to rent may become an entry barrier to other firms and chains.
- **Governance**¹: describes the dynamic distribution of power, learning and benefits among organisations in a value chain. It refers to the inter-firm relationships and institutional mechanisms through which non-market coordination of activities in the chain is achieved. In agriculture, the buyers, processors and sometimes input suppliers may act as lead firms.

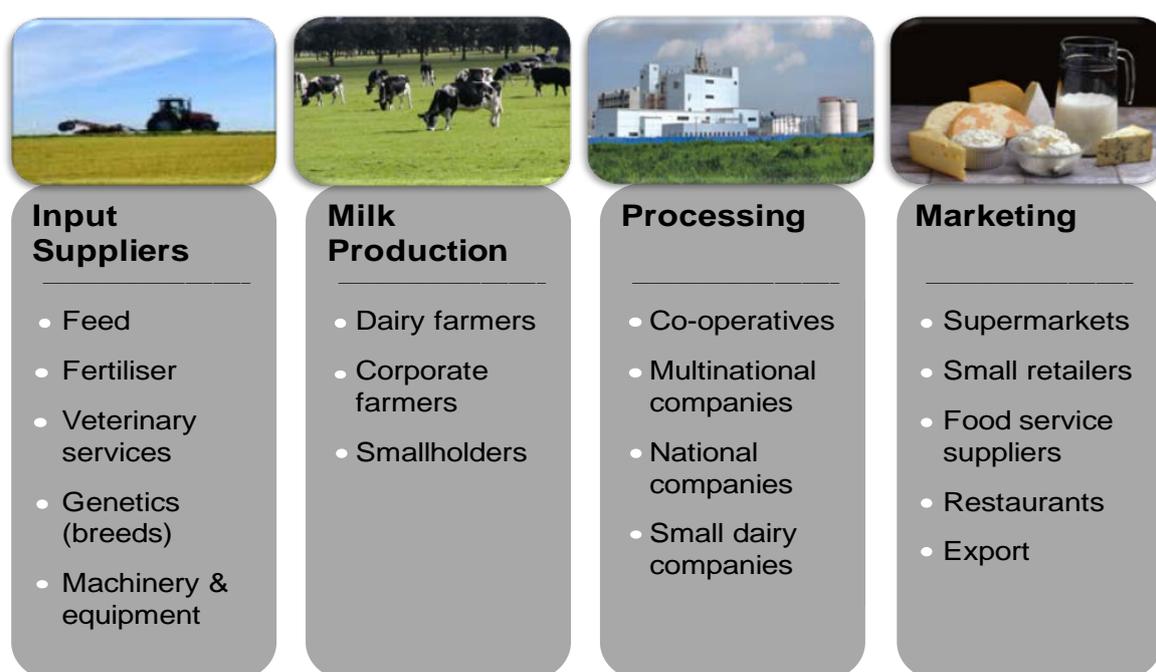
¹ Aspects of value chain governance are discussed in Section 2.3.1.

2.2.2 DAIRY VALUE CHAIN

The dairy value chain is comprised of a group of actors that are directly involved within the dairy industry. Each agent plays an essential role in the chain, thus, the entire chain's performance is made by the combination of each individual agent and its interface with other actors. Henehan (2003) states that critical links in the dairy value chain must function as an effective system to support a viable industry. The chain members should work together sharing the same goal, which is to optimise the entire chain's performance.

The basic structure of a dairy value chain is shown in Figure 2.3. The first column in the chain, "Input Suppliers" refers to the main products and services a dairy farmer needs to run the operation. The "Milk Production" column contains the three most frequent types of producers, dairy farmers, corporate farmers and small-holder farmers. "Processing" — where the raw milk is pasteurised and transformed into products — have basically four different types of agents, co-operatives, multinational companies, national companies and small dairies. The final column, "Marketing," refers to supermarkets, restaurants and other channels where dairy products are sold.

Figure 2.3 Dairy value chain.



Source: Adapted from Lowe & Gereffi (2009).

A significant body of research has focused upon the dairy value chain in recent years in order to identify areas for improvement. Lowe and Gereffi (2009) examined the United States dairy and beef industry, seeking to recognise key industry actors positioned to help reduce two of the most severe sources of environmental emissions: enteric fermentation and manure. The Meridian Institute (2009) studied innovative ways to apply science and technology to enhance the dairy value chain in Africa. The study revealed key constraints in the chain and suggested appropriate technologies that can be used to address such constraints.

Another study in this field was conducted by Painter (2007). He compared the Canadian and New Zealand dairy value chains. He stated that although dairy farmers in both countries have done well financially, there are significant differences between the countries approaches. New Zealand dairy farmers operate in a free and competitive market with no government subsidies, while on the other hand in Canada farmers have a supply management system that protects them from outside competition and provides cost-plus pricing. Bankuti (2007) analysed transactions and governance structures present in the dairy value chains in Brazil and France. She suggested that the differences found between the two countries are due to distinctions of institutional and organisational environments, agents, and coordination level in the chain.

Conforte, Garnevska, Kilgour, Locke, and Scrimgeour (2008) investigated the elements of success and failure in the New Zealand dairy value chain. The critical success factors identified by the authors were: development of international markets; effective political support; effective evolution of industry structure; farmer engagement in policy, strategy, structure and operations; continuing technological advance; and development of economies of scale. The challenges revealed were: increasing animal welfare demands; meeting environmental challenges; managing inter-generational transfers; achieving appropriate research investment in pastures; achieving sustainable and efficient industry structures; and sustaining effective international marketing strategies.

These studies have explored the dairy value chain as a whole, providing a holistic perspective of the entire system. However, there are also studies that focused on a particular linkage of the value chain. Schlecht and Spiller (2009) examined the procurement strategies in the German dairy sector, focusing

on the business relationship between dairy processors and dairy farmers. They found that farmers have a preference for entrepreneurial freedom and independence, thus establishment of strong, vertically-coordinated arrangements in the dairy industry is not very likely in Germany. Dries et al. (2007) also studied dairy farmer-processor relationships, but in Armenia, Moldova and Ukraine. The research revealed a varied set of supply relationships and elucidated issues regarding farmer satisfaction and the presence of written contracts in those countries.

Dries and Swinnen (2004) investigated the introduction of high quality standards throughout the dairy value chain and demonstrated how this resulted in increased vertical coordination. This study took place in Bulgaria, Poland and Slovakia. Zhao (2007) was more specific, focusing on a particular company and its interaction with its farmer-suppliers. The study explored how the Web can assist the management of communication between a dairy co-operative and its farmer-shareholders in New Zealand.

Studies on the dairy value chain have demonstrated the importance that the link between farmers and processors has for the entire chain. Although all agents present in the four different sections of the chain have crucial importance, the dairy farmers and milk processors link is considered critical for the performance of the entire network.

2.3 GOVERNANCE STRUCTURE

Governance is a current topic in today's business environment. To remain competitive, firms have to establish governance structures that act within the organisation, known as corporate governance, to facilitate efficient control of the business. Likewise, organisations have to understand the governance structure that exists within the value chain — value chain governance — to be able to implement strategies to streamline the entire system.

The dynamic character of relations and interdependencies between different stakeholders in business generally and in agri-food chains in particular cause a constant challenge in today's business society (Gellynck & Molnár, 2009). Raynaud, Sauvee and Valceschini (2005) indicate that one of the key

success factors for facing this challenge is the use of innovative chain governance structures. Sound chain governance structures allow organisations to apply mechanisms to control quality, avoid opportunistic behaviour of agents, and enhance the chain's performance.

Growing consumer expectations on the safety, quality and availability of food, along with increasing regulatory requirements and intensifying competition, have encouraged agri-businesses to reorganise into integrated chains. These structures imply increased mutual dependence and add a new dimension to the risk of business failure, since the performance of a whole chain might be jeopardised by a single chain partner (Fischer et al., 2007).

Although considerable theoretical effort in the past has been devoted to gaining a better understanding of governance structures (Gereffi et al., 2005; Jagdev & Thoben, 2001; Webster, 1992; Williamson, 1991), Gellynck and Molnár (2009) and Albers, Gehring and Heuermann (2003) argue that a more extensive empirical analysis is still required.

The perfect governance structure — one that effectively bridges the gaps that persist in both modern corporations and global value chains — has yet to emerge (Fawcett, Ogden, Maignan, & Cooper, 2006). However, leveraging strong core competencies through the use of cross-functional teams, governance councils, advisory boards and an appropriate reporting structure promises to mitigate many of the challenges encountered in today's corporations and value chains.

2.3.1 VALUE CHAIN GOVERNANCE

Value chain governance plays a key role in this new business era. Performance of a value chain depends largely on efficient coordination of the activities executed by each chain member (Lee, Padmanabhan, & Whang, 1997; Schneeweiss, Zimmer, & Zimmermann, 2004). Coordination is needed to guarantee both the timely flow of information and of materials. To succeed in coordinating the chain, organisations need to agree on common governance structures to manage the flow of resources. These governance mechanisms support the processes and structure the relationships that exist between organisations (Ghosh & Fedorowicz, 2008).

Governance can be defined as a dynamic feature of value chains that characterises the relationships or linkages among organisations in the chain. Governance is important as it relates to the ability of a chain's actor to determine, control and coordinate the activities of other members involved in the value-added chain. At any point in the chain, a firm (organisation or institution) can set parameters which other members in the chain should meet to be able to operate. The stakeholders responsible for establishing these parameters can be one or more firms in the chain, actors in the larger enabling environment, or a combination of the two (Frederick & Gereffi, 2009).

Value chain governance ensures that interactions between firms along a value chain exhibit some level of organisation rather than simply being random. Value chains are governed by the parameters that are set requiring product, process and logistic qualification. These parameters have consequences up and down the chain, encompassing the activities, actors, roles and functions involved within the network (J.E. Austin Associates, 2007).

Frederick & Gereffi (2009) believe that the need for value chain governance has been increased mainly because of two trends. First, the trend towards out-sourcing non-strategic activities previously performed in-house by vertically integrated firms. Out-sourcing has led to managerial control being replaced by lead firms exerting control over their suppliers without direct ownership. The second trend relates to product differentiation strategies and the growing number of environmental and social compliance standards which together have made it imperative to coordinate activities previously carried out at arm's length.

Value chain governance takes action when some firms work is based on the parameters set by other more powerful firms in the value chain. The firm that sets the parameters with which other firms in the chain must comply is referred to as the 'lead firm'. Lead firms have the ability (within limits) to choose and replace suppliers. This purchasing power allows a lead firm to explicitly coordinate the activities of the chain and to pressure suppliers to lower costs, increase quality, adopt specific equipment or business processes, and invest in particular areas of interest (Frederick & Gereffi, 2009).

Fawcett et al. (2006) suggest that without a 'captain' to govern — that is, to make holistic decisions for the value chain and manage how they are carried out — it is easy for each member of the chain to follow its own course, pursuing a strategy of myopic self-interest. The challenge is to establish a governance structure that enhances communication and coordination among value chain partners. This structure must drive strong operational excellence and corporate competence while simultaneously promoting inter-organisational process collaboration.

2.3.2 CORPORATE GOVERNANCE

Another form of governance that has vital importance in today's competitive marketplace is Corporate Governance, in other words the governance executed within an organisation. Tik (2009) asserts that there are two distinct characteristics that can be identified among the many definitions of the term. First, he argues that the concept is defined either too narrowly or too widely in its scope, reflecting different disciplines and theoretical backgrounds. Second, corporate governance is defined from two differing theoretical perspectives on the role and fundamental purpose of publicly traded corporations.

Financial economists define corporate governance as ways in which investors assure themselves of getting a return on their investment (Shleifer & Vishny, 1997), or as ways of ensuring that corporate actions, assets and agents are directed to maximise shareholder wealth (Healy, 2003). On the other hand, organisational scholars define corporate governance as the determination of the broad users among whom organisational resources are deployed and the resolution of conflicts among the myriad participants in an organisation (Daily, Dalton, & Cannella, 2003). Similarly, the Organisation for Economic Cooperation and Development (OECD), in its 1999 working paper (revised and updated April 2004), defines corporate governance as:

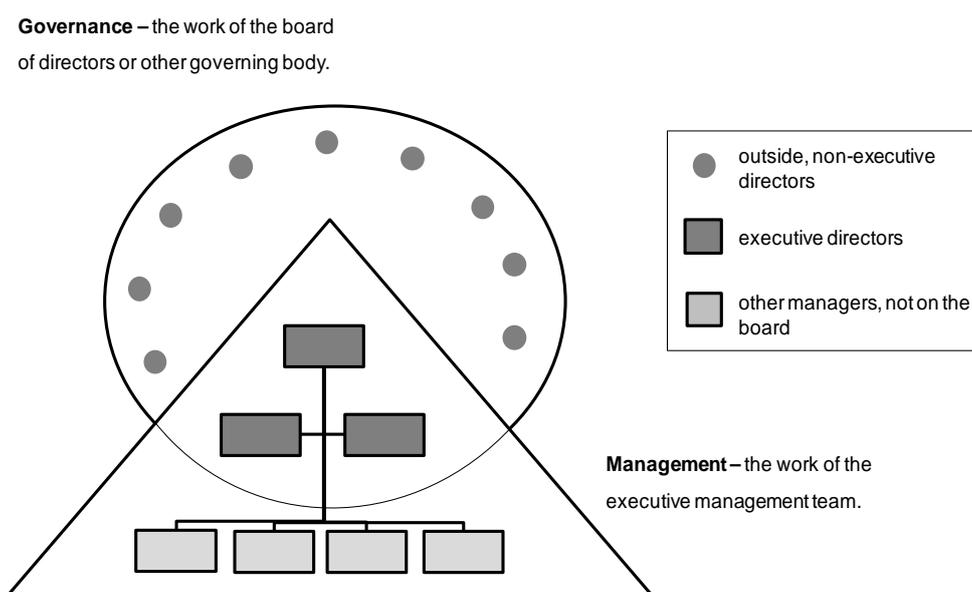
... a set of relationships between a company's management, its board, its shareholders and stakeholders. Good corporate governance should... facilitate effective monitoring, thereby encouraging firms to use resources more efficiently.

Lazonick and O`Sullivan (2000) point out that a critical issue for companies in globally competitive markets is to adapt their organisational and governance structures; forms of governance become more significant as business models increase in complexity. Sokol (2009) notes that good corporate governance may provide firms with an edge over competitors, since it improves resource availability within the firm and leads to improved performance.

To better understand the term corporate governance, it is essential to make a distinction between governance and management. Tricker (2009) points out that professional management was the major focus in business throughout the 20th century, however, today the focus lies in how companies are governed.

The notion of management as a hierarchy is commonplace. A chief executive officer (CEO) has the overall responsibility, with other managers reporting to him or her and so on down the management hierarchy. Authority and responsibility is delegated downwards. In contrast, on the board of directors — the governing body of the organisation — every director has equal responsibility and similar duties and powers under the law (Tricker, 2009). In Figure 2.4, the work of the board is depicted as a circle, superimposed on the management, which demonstrates the interaction between the two bodies.

Figure 2.4 The board and management.

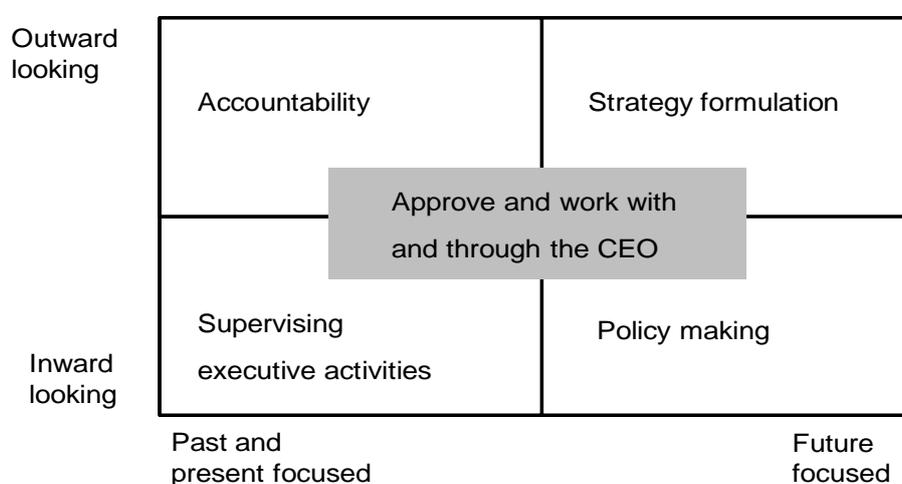


Source: Adapted from Tricker (2009).

Tricker (2009) states that in a unitary board — that is, a board with both executive and non-executive, or outside directors — the executive directors hold a managerial role in addition to their responsibilities as a member of the board of directors. As executives they are employees of the company and covered by employment law. Directors, as such, are not employees.

Overall, the board's task is to direct the company, which consists of four basic elements: 1) strategy formulation; 2) policy making; 3) supervision of executive management; and, 4) accountability to shareholders and others. In fulfilling their duties, directors have to consider the future of the company as well as its present position and recent results. Furthermore, they need to take a view looking inward at the company and its component parts as well outward to its competitive market context and the broader economic, political and social contexts in which it operates. The four basic board perspectives and processes are shown in Figure 2.5.

Figure 2.5 The basic board perspectives and processes.



Source: Tricker (2009).

In essence, the management team runs the business, while the board of directors makes certain that it is being well run and in the right direction. Corporate governance ensures that decisions are made that lead to long-term, sustainable value for the organisation and its shareholders.

2.4 SUPPLY CHAIN MANAGEMENT

In today's fast-changing marketplace, where competition among organisations is very fierce, to create a competitive advantage companies need to expand the business's focus across the organisations' boundaries to encompass the entire supply chain. The old way of doing business based on mass production and an adversarial relationship with suppliers is no longer valid. In recent decades, the power has moved from manufacturing companies to customers, which has required new business models based on customised production and collaborative relationships with members of the supply chain (Bowersox, Closs, & Stank, 2000).

In this new environment, where the focus is on customer satisfaction, organisations have become more specialised and have searched for suppliers who can provide low-cost, quality materials rather than own their source of supply (Lummus & Vokurka, 1999). The supply chains have turned out to be longer and more complex, being critical for companies to manage the entire network of supply to optimise overall performance.

Lambert and Cooper (2000) state that one of the most significant paradigm shifts of modern business management is that individual businesses no longer compete as solely autonomous entities, but rather as supply chains. Instead of brand versus brand or store versus store, it is now suppliers-brand-store versus suppliers-brand-store, or supply chain versus supply chain. Lummus and Vokurka (1999) also claim that firms can no longer effectively compete in isolation from their suppliers and other entities in the supply chain.

Trends in supply chain relationships reveal the necessity to increase cooperation and trust among supply chain partners in order to enhance efficiency and effectiveness. Long-term relationships, based on a win-win attitude, are replacing the traditional adversarial relationships. A positive buyer-supplier interaction might yield favourable results not only for both parties, but for the supply chain as a whole.

According to Ballou (2006), without a doubt, supply chain management will continue to grow in importance as companies continue to pursue out-sourcing, expand their international operations and do business in a global economic environment. It often is the basis for a firm's competitive strategy, so the increasing interest that the concept has gained in recent years is understandable.

2.4.1 EMERGENCE OF SUPPLY CHAIN MANAGEMENT

As competition in the 1990s intensified and markets became global, so did the challenges associated with getting a product and service to the right place at the right time at the lowest cost (Li et al., 2006). Due to changes that have been occurring in world markets, firms had to extend their enterprise integration to incorporate customers and suppliers to preserve their competitiveness. This extension reflected the position of logistics in the broader perspective of supply chain management (Bowersox, Closs, & Cooper, 2002).

The term supply chain management (SCM) was originally introduced by consultants in the early 1980s and it has been gaining more attention since then (Lambert & Cooper, 2000). Stock and Lambert (2001) point out that in the 1990s, the increasing rivalry among organisations accelerated the development of the concept. Firms started to look outside their borders seeking operational optimisation.

Historically, the three fundamental stages of the supply chain: procurement, production and distribution, have been managed independently, buffered by large inventories. Rising competitive pressures and market globalisation forced firms to develop supply chains that could quickly respond to customer needs. To remain competitive, these firms had to reduce operating costs while continuously improving customer service. With advances in communications and information technology, as well as a rapidly growing array of logistics options, firms had the opportunity to reduce operating cost and enhance customer satisfaction by coordinating the planning of these stages (Thomas & Griffin, 1996).

To better understand the term supply chain management and identify its strengths, first it is necessary to analyse how it is defined by the literature. Various definitions have been offered since the concept has grown in popularity (Cooper, Lambert, & Pagh, 1997; Mentzer, Witt, Keebler, Min, Nix, Smith, & Zacharia, 2001; Tan, 2001). According to the Council of Supply Chain Management Professionals [CSCMP] (2010):

supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.

Mentzer et al. (2001), after a wide study of several definitions on supply chain management, define it as:

the systematic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across business within the supply chain, for the purpose of improving the long-term performance of the individual companies and the supply chain as a whole.
(p. 18)

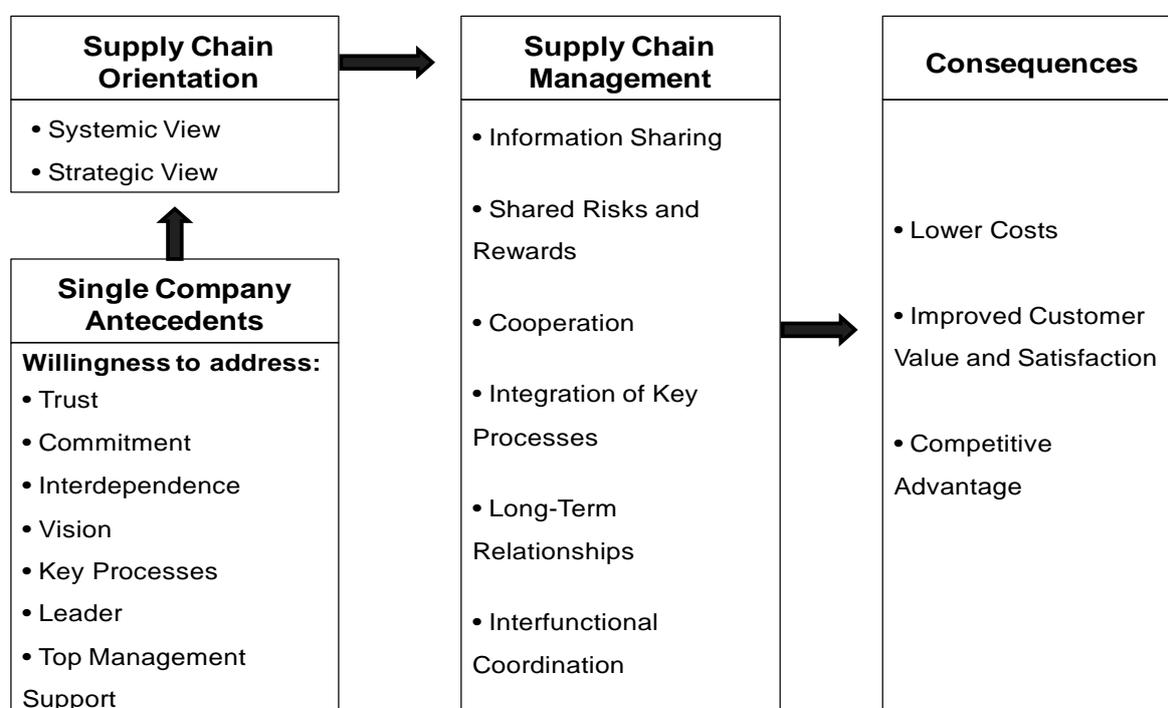
Both definitions highlight the importance of integration and coordination among members of the supply chain to enhance the overall chain performance. They provide a holistic view regarding how organisations should deal with the logistics functions, suggesting that the company's focus should extend beyond its own performance to become more of an inter-organisational focus. In that context, logistics adopts a broader approach, being known as supply chain management, collaborating to create competitive advantage. Stein and Voehl (1998) argue that the main goal of SCM is to develop an integrated system that allows members involved to anticipate the emerging demands of participants in the supply chain. Likewise, to coordinate their efforts in the development of products

and services that better address the customers' needs. In essence, supply chain management strives to increase the overall chain performance by offering a systemic view of the entire chain network.

For a successful implementation of SCM, a crucial aspect is the quality of the relationship between members of the chain. Effective SCM is made up of a series of partnerships, thus, it requires partners to build and maintain long-term relationships (Ballou, 2006; Cooper et al., 1997; Power, 2005). Cooper et al. (1997) believe that the relationship time horizon extends beyond the life of the contract — perhaps indefinitely — and, at the same time, the number of partners should be small to facilitate increased cooperation and information sharing.

Since supply chain relationships are so important, they are typically long-term and require considerable strategic coordination. Mentzer et al. (2001) examined the antecedents and consequences of supply chain management at the strategic level, which can be analysed in Figure 2.6.

Figure 2.6 Supply chain management antecedents and consequences.



Source: Mentzer et al. (2001).

Mentzer et al. (2001) classify as antecedents to SCM the factors that enhance or impede the implementation of the concept. The authors revealed key issues that need to be taken into account such as the organisation stakeholders' vision, top management support and definition of key processes to be integrated.

Although Mentzer et al. (2001) cited a number of key factors, special attention should be given to two variables in particular, which are trust and commitment (Morgan & Hunt, 1994). Moorman, Deshpande, and Zaltman (1993) define trust as a willingness to rely on an exchange partner in whom one has confidence. Fischer et al. (2007) define it as willingness to take risks. Trust has a direct role in facilitating organisations to overcome difficulties that may arise in the supply chain such as conflict of power and lack of transparency.

In addition, commitment is also very important. It is defined by Dwyer, Schurr, and Oh (1987) as an implicit or explicit pledge of relational continuity between exchange partners. Commitment and trust are essential ingredients for a successful long-term relationship (Fischer et al., 2007), which is a vital component of SCM.

Putting together the effects of trust and commitment, Morgan and Hunt (1994) believe that commitment and trust are key because they encourage marketers to (1) work at preserving relationship investments by cooperating with exchange partners, (2) resist attractive short-term alternatives in favour of the expected long-term benefits of staying with existing partners, and (3) view potentially high-risk actions as prudent because of the belief that their partners will not act opportunistically. As such, trust and commitment lead directly to cooperative behaviours in the implementation of SCM (Mentzer et al., 2001).

As regards the consequences of implementation of SCM various authors suggest that the motive behind the formation of a supply chain arrangement is to increase competitive advantage (Basu & Wright, 2008; Chopra & Meindl, 2010; Sadler, 2007). Porter (1985) defines two types of competitive advantage: cost leadership and differentiation. According to Basu and Wright (2008), improving a firm's competitive advantage and profitability through SCM can be accomplished by enhancing overall

customer satisfaction and reducing costs. By the same token, Sadler (2007) proposes that SCM aims at delivering enhanced customer service and economic value through synchronised management of the flow of physical goods and associated information from sourcing to consumption.

Porter (1985) states that competitive advantage grows fundamentally out of the customer value a firm creates, and it aims to establish a profitable and sustainable position against the forces that determine industry competition. Thus, as Mentzer et al. (2001) propose, the implementation of SCM enhances customer value and satisfaction, which in turn leads to enhanced competitive advantage for the supply chain, as well as each member firm. This, ultimately, improves the profitability of the supply chain for its participants.

2.4.2 SUPPLY CHAIN INTEGRATION

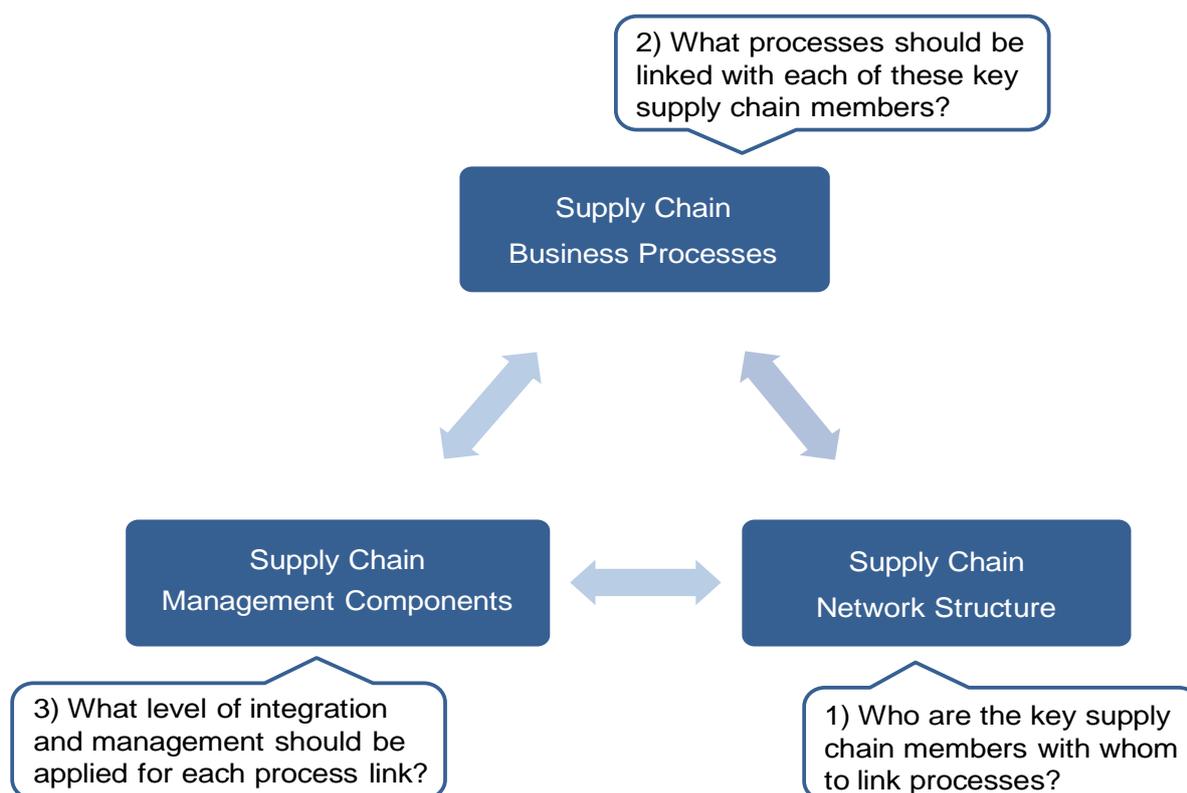
One of the biggest challenges for business is to integrate supply chains for the benefit of customers and to make a profit (Sadler, 2007). All firms participate in a supply chain, from the raw materials to the ultimate consumer. How much of this supply chain needs to be managed and integrated depends on several factors including the complexity of the product, the number of available suppliers and the availability of raw materials. Furthermore, dimensions that need to be considered include the length of the supply chain and the number of suppliers and customers at each level.

Supply chain integration is a very important topic that needs to be considered so that positive results from the implementation of SCM can be achieved. It should be noted that the level of integration is determined at the strategic level, hence, strategic alignment between the chain's members is essential. Power (2005) suggests that integration of supply chain processes through investment in cooperative arrangements and technologies is difficult to separate from, or consider independently of, the strategic positioning of organisations.

Lambert and Cooper (2000) elaborated a conceptual framework which emphasises the interrelated nature of SCM and the need to proceed through several steps to design and successfully manage a supply chain. The SCM framework created by the authors consists of three closely interrelated

elements: 1) the supply chain network structure; 2) the supply chain business processes; and 3) the supply chain management components (Figure 2.7). These three key elements can be taken as a guideline for designing an effective integrated system.

Figure 2.7 Supply chain management framework: elements and key decisions.



Source: Lambert & Cooper (2000).

The first element suggested by Lambert and Cooper (2000) is the supply chain network structure. Firms participate in supply chains and the closeness of the relationship at different points in the supply chain differs between companies and networks. Management needs to choose the level of partnership appropriate for particular supply chain links. Not all links throughout the supply chain should be closely coordinated and integrated. The most appropriate relationship is the one that best fits the specific set of circumstances. Determining which parts of the supply chain deserve management attention must be weighed against the firm's capabilities and the importance to the firm. At this preliminary stage, management should ask "Who are the key supply chain members with whom to link processes?".

The next step is the supply chain business processes. Successful SCM requires a change from managing individual functions to integrating activities into key supply chain processes. Traditionally, both upstream and downstream portions of the supply chain have interacted as disconnected entities receiving sporadic flows of information over time. Operating an integrated supply chain requires continuous information flows, which in turn help to create the best product flows (Lambert & Cooper, 2000). Once the key supply chain members are identified, the next step is to define the processes that need to be linked with each of these members.

Last comes the SCM component. At this stage the question asked is, "what level of integration and management should be applied for each process link". Lambert and Cooper (2000) identify the following nine management components for successful SCM: planning and control; work structure; organisation structure; product flow structure; information flow structure; management methods; power and leadership structure; risk and reward structure; and culture and attitude. All these variables play a crucial role in determining the performance of the system; as a consequence it is necessary to identify the level of integration required.

Following the framework proposed by Lambert and Cooper (2000), crucial variables required to effectively integrate members of a supply chain are identified. There is also the necessity to elucidate the importance of the quality of the relationship between the chain's members for the proposed arrangement to achieve its utmost potential.

Building good relationships with suppliers and customers is an essential part of SCM. Liker and Choi (2006) suggest that partnerships are the supply chain's lifeblood. The quality of the relationships between members plays a major role in determining the characteristics of the network structure. Top-performing supply chains demonstrate such features as agility, adaptability and alignment (Lee, 2006). When designing the scheme to integrate the supply chain, considerable attention should be given to the relationship quality aspect.

2.4.3 SUPPLY CHAIN MANAGEMENT PRACTICES

In adopting a supply chain management philosophy, organisations must establish management practices that permit them to act or behave consistently with the philosophy. Many authors have focused on the activities that constitute supply chain management (Ballou, 2004; Chopra & Meindl, 2010); however, few of them have actually discussed the management practices that are in place, especially in the agri-food domain.

Li et al. (2006) define SCM practices as a set of activities undertaken by an organisation to promote effective management of its supply chain. Donlon (1996) explains the evolution of SCM practices, including supplier partnership, out-sourcing, cycle time compression, continuous process flow and information technology sharing. Tan, Kannan, and Handfield (1998) focus in their study on purchasing, quality and customer relationships to represent SCM practices. Alvarado and Kotzab (2001) include in their list of SCM practices concentration on core competencies, use of inter-organisational systems such as EDI², and elimination of excess inventory by postponing customisation toward the end of the supply chain.

Furthermore, Tan, Lyman and Wisner (2002) identify six aspects of SCM practices through factor analysis: supply chain integration; information sharing; supply chain characteristics; customer service management; geographical proximity; and, JIT³ capability. Chen and Paulraj (2004) use supplier base reduction, long-term relationship, communication, cross-functional teams and supplier involvement to measure buyer-supplier relationships. Li et al. (2006) focus on strategic supplier partnerships, customer relationships, level of information sharing, quality of information sharing and postponement. Thus, the literature portrays SCM practices from a variety of different perspectives with a common goal of ultimately improving organisational performance.

Chin, Tummala, Leung and Tang (2004), by examining several company practices of SCM, have identified four strategic success factors. They classify the corresponding key issues in each strategic

² Electronic data interchange (EDI).

³ Just-in-time (JIT) is a business philosophy that strives to improve a business's return on investment by reducing inventory and associated carrying costs.

area as operational success factors, as can be seen in Table 2.1. The four strategic factors identified by the authors are: 1) Building buyer-supplier relationships; 2) Implementing information and communication technologies; 3) Re-engineering material flows; and 4) Identifying performance measures.

Table 2.1 Strategic success factors and SCM practices.

Strategic success factors	SCM practices (operational issues)
Building buyer-supplier relationships	Establishing communication channels Forming cross-functional teams
Employing information and communication technologies	Web-based IT tools Fact-based decision-making support
Re-engineering material flows	Reducing inventory levels Logistics network desing
Changing corporate culture	Management support and commitment Participative management
Identifying performance measures	Supply-chain wide performance measures

Source: Adapted from Chin et al. (2004).

1) *Buyer-supplier relationships*

Good relationship management with suppliers and customers is a crucial element of supply chain management. In the past, emphasis was placed on the importance of adversarial or arms-length relationships as the way of doing business. Nowadays, closer, trust-based and long-term relationships with supply chain partners are imperative in sustaining competitive advantage. In this strategic area, there are two key operational issues, namely, communication channels and cross-functional teams.

Communication channels have to be well developed in order to enhance interactions and communications within and across organisations. Communication is an essential ingredient and it lies at the heart of information transfer (Spekman, Spear, & Kamauff, 2002). Frequent communication of objectives, measurements and upcoming changes keep all parties involved in the relationship informed and focused, which turns transactional-oriented relationships into partnerships.

With a view to enhancing the organisation's flexibility, cross-functional teams must be established to support integration of various processes in the supply chain. Derocher and Kilpatrick (2000) report that functionally-oriented structures always lack cross-functional objectives and teamwork, and as a result each function is naturally motivated to focus only on its own success regardless of the whole chain.

2) Employing information and communication technologies

Due to the "explosion" of system-wide information and communication technologies, supply chain members can share rich information at lower costs more than ever before (Chin et al., 2004). In order to improve the efficiency and effectiveness of SCM, different kinds of software tools and techniques can be employed that allow speedy information transfer and make it more useful and applicable under different situations along the supply chain (Chin et al., 2004).

Chin et al. (2004) claim that apart from basic communication methods such as e-mail, fax and telephone, other web-based information technologies (IT) are quite useful for supply chain members. Internet-based World Wide Web (www), intranet, and electronic data interchange (EDI) can be used for information sharing in computer-to-computer and business-to-business transactions. In addition, web-based information technologies can facilitate accurate, frequent, real-time and seamless exchange of information, both internally and between organisations. Likewise, analytical information technologies, as opined by Shapiro (2001), are commonly used as enterprise-wide business application tools to collaborate on decision-making, such as enterprise resources planning (ERP) and decision support system (DSS) tools.

3) *Re-engineering material flows*

Effective management of material flows in the supply chain is one of the most imperative strategic success factors. Towill, Childerhouse, and Disney (2000) suggest that control of a smooth material flow lies at the heart of SCM design and practices. Also, the authors claim that re-engineering the material flows improve supply chain performance by streamlining the entire network.

Reduction of inventories across the supply chain members is one of the major reasons to critically examine the supply chain and the associated processes. Matching supply and demand accurately is a critical challenge as distorted information (i.e. due to the *bullwhip effect*⁴) from one end of a supply chain to the other can occur at any time. However, a variety of approaches can be employed such as vendor-managed inventory (VMI) to reduce demand variability along the supply chain; postponement to minimise the risk of wrong forecasting by delaying the point in time when a product assumes its identity; cross-docking to speed up the efficient flow of products without holding inventory more than 48 hours to reduce inventory costs (Chin et al., 2004).

Development of an effective logistics network is essential to support an efficient flow of various types of materials, such as raw material, work-in-process (WIP) and finished goods among supply chain members. With this logistics network, channel members minimise their annual system-wide costs, including production and purchasing costs, inventory holding costs, facility costs (storage, handling and fixed costs), and transportation costs to meet different customer service levels (Simchi-Levi, Kaminsky, & Simchi-Levi, 2000).

4) *Identifying performance measures*

Nowadays, there is a need to develop supply-chain-wide performance measures, in other words KPI (key performance indicators). With appropriate performance metrics, companies can find the opportunities and motivation to drive continuous improvement in the supply chains. Relevant

⁴ One outcome of the lack of supply chain coordination is the *bullwhip effect*, in which fluctuations in orders increase as they move up the supply chain from retailers to wholesalers to manufactures to suppliers (Chopra & Meindl, 2010).

performance measurement can also encourage every firm in the supply chain and employees in each firm to direct all of their efforts to increase profitability in the supply chain as a whole instead of being focused on functional silos (Fredendall & Hill, 2001). Under the SCM philosophy, performance metrics are no longer organisation-based but supply-chain-wide. Many companies lack performance measures for the complete supply chain (Chin et al., 2004). KPIs are necessary in order to permit members to assess efficiency along the entire network system, for the weak links to be subsequently streamlined. This culminates in an efficient and effective supply chain, satisfying customers and boosting profitability.

In today's fast-changing environment, to be competitive supply chains have to be cost-efficient, responsive, flexible and agile. In addition, they must provide the right product, in the right quantity, at the right place and time, and in the right quality. Therefore, SCM acts as a crucial concept to those organisations that endeavour to stay ahead of competitors.

2.5 CO-OPERATIVES

A co-operative is a form of business organisation in which the members are also the owners. This type of organisation shares similar concepts with Investor Oriented Firms (IOF), such as maximising the long-term wealth of shareholders (Lynch, 1998). However, there are also unique aspects that need to be carefully analysed when comparing it with other forms of businesses.

Donoso, Shadbolt, and Bailey (2004) state that there are three key differences that distinguish a co-operative from other business models. These are the user-owner principle, which means that the people who own and finance the co-operative are those who use it; the user control principle, which implies that the control of the co-operative is under those who use it either on a proportional or democratic basis; and the user-benefit principle, which implies that the benefits of the co-operative are distributed to its users on the basis of their use.

Lynch (1998) observes that while IOFs have the single objective of maximising value at company level, co-operatives must maximise value both at the co-operative/firm level and at member level. In

addition, a unique characteristic of co-operatives, which is often overlooked, is the way relationships between the co-operative members, board of directors, and management team, also known as the 'management triangle', are arranged. The involvement of the members in management decisions is a critical difference from other forms of business (Donoso et al., 2004).

Many definitions of co-operatives are available in the literature. The International Co-operative Association (ICA) defines it as "an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" (ICA, 2010).

Barton (1989) defines it as a user-owned and user-controlled business that distributes benefits on the basis of use. Also, a very similar and generally accepted definition of co-operative is: it is a producer organisation that is user-owned and user-controlled to benefit the user (Cook, 1997).

Despite the different definitions of the term, all of them share the same core idea which is to enhance the member's (shareholder's) long-term wealth by pooling resources with other members. The ICA (2010) recognises seven co-operative principles which an organisation should follow in order to maintain the co-operative spirit:

- Voluntary and open membership
- Democratic member control
- Member economic participation
- Autonomy and independence
- Education, training and information
- Cooperation among co-operatives
- Concern for community

Co-operatives play an extremely important role throughout the world. According to figures from the International Co-operative Association (2010) over 800 million people are members of co-operatives around the globe. In France, nine out of ten farmers are members of agricultural co-operatives and the same proportion can also be seen in Japan. In Germany 8,106 co-operatives provide jobs for more than 400,000 people. In Norway, dairy co-operatives are responsible for the collection of 99 per cent of the milk output, while in New Zealand they are responsible for more than 95 per cent and Poland the percentage decreases to 75 per cent. In the United States more than 30 co-operatives have annual revenue in excess of USD 1 billion dollars, and in the United Kingdom the largest independent travel agency has a co-operative business model.

2.5.1 AGRICULTURAL CO-OPERATIVES

All over the world, farmers have formed co-operatives that provide them with services that can be more efficiently produced on a scale beyond the size of the individual farm. These services are provided by a firm – the co-operative firm – that is owned by all members collectively (Bijman, 2002). The main function of an agricultural co-operative is to further members' income by providing specific services that align with the activities of the member firms.

Chaddad (2007a) observes that there is a long debate in the literature regarding the economic role of farmer-owned co-operatives in the agri-food sector. On one hand, some scholars argue that co-operatives will have declining importance as the agri-food sector becomes increasingly industrialised and global (Boehlje, 1997; Caves & Petersen, 1986; Holmstrom, 1999). On the other hand, others speculate that co-operatives may increase their participation in the agri-food sector to ameliorate market failures, reduce transaction costs, and also to add value to producers' incomes (Sexton, 1986; Royer, 1995; Rogers, 1997).

In general, agricultural co-operatives play an increasingly important economic role in advanced agricultural countries such as the United States (Cook, 1995) and Western Europe (Van Dijk, Kyriakopoulos, & Nilsson, 1997). Particularly in the dairy industry, farmer-owned co-operatives play a rather dominant role with market shares above 80 per cent in milk collection in the United States, the

major dairy countries in Western Europe and also in New Zealand (Chaddad, 2007b). Reid (2010) concurs, suggesting that more than 80 per cent of the world's milk is sold through farmer-owned co-operatives.

In a context of internationalisation and concentration of the global value chains, agri-food co-operatives often face problems of capital access and governance (Doyon, 2005). Spear (2001) suggests that limited access to capital, management structure, governance conflicts, and the local, regional or national focus of co-operatives often limit their expansion. Cook (1997) also points out that co-operatives commonly face constraints in relation to mission clarity, single origin nature, capital availability and governance (lack of skilled outside directors).

Two basic types of agricultural producer co-operatives can be distinguished in the literature: Traditional co-operatives and new generation co-operatives (Gall & Schroder, 2006). Cook (1995) suggests that most traditional co-operative groups were formed for defensive reasons. For example, during the 1920s, farmers in the United States formed a number of grain marketing co-operatives that built storage facilities to reduce their vulnerability to the railroads and other buyers/transporters of their commodities. Recent co-operative development in the U.S. culminated in the emergence of the so-called "new generation co-operatives" (Trechter & Murray-Prior, 2003).

Traditional Co-operatives

Cook (1995) provides two economic justifications for the formation of traditional co-operatives: excess supply/depressed prices and market failure (opportunism/holdup). Traditional co-operatives usually involve some degree of vertical integration. Thus, their establishment involves their members becoming involved in two new and unfamiliar organisational structures; a horizontal alliance and using that alliance to operate a supply, processing or distribution business.

The shortcomings of traditional co-operatives are primarily transaction-cost-based and have been documented by Cook (1995) as: 1) free-rider problems; 2) the horizon problem (co-operatives are discouraged from making long-term investments because members believe that restrictions on

transferability of shares limit the possibility of them achieving a satisfactory return); 3) the portfolio problem (the co-operative's risk/yield profile may not match that of individual members); 4) control problems relating to relationships between the members and board, and the board and management; and 5) influence cost problems (the time and effort put in by particular groups of members to influence the board, or perhaps, management directly). Cook (1995) argues that these problems are felt most acutely in multi-functional, diversified regional co-operatives.

New Generation Co-operatives

One variation on the traditional co-operative model that has received considerable attention in the literature is the "New Generation Co-operative" – NGC (Cook, 1995; Katz & Boland, 2002). The term originated in the mid-1990s in the United States and is now widely used. The core characteristic of NGCs is that capital is not treated as common property (O'Conner & Thompson, 2001). The elements that distinguish NGCs from traditional co-operatives relate to: closed membership, tradeable delivery rights (initially priced to secure the required start-up investment capital), contractual obligations to deliver, and (usually) more focus on value-added niche products than traditional co-operatives (Chaddad & Cook, 2004; Katz & Boland, 2002; Olson, Kibbe, & Goreham, 1998).

2.5.2 AGRICULTURAL CO-OPERATIVES IN NEW ZEALAND

Agriculture is vital to New Zealand's economy. This sector is at the heart of the country's earning power, out-performing all other sectors of the economy and dominating investment in research and development. According to Reynolds (2006), New Zealand has built and maintained economic prosperity on the back of its pastoral industries.

Agricultural co-operatives play an extremely important role in New Zealand's agriculture. These co-operatives are well established and date from the 1870s. They can still be seen in sectors such as meat, wool, pork, fertiliser, horticulture, honey and dairy, being especially strong in this last sector where the main co-operative is responsible for the collection of approximately 92 per cent of the country's milk production and it is the top player in the international dairy market (Donoso, 2003).

Co-operatives in New Zealand differ among sectors. Maunier (1984) and Donoso (2003) state that one of the main reasons for the differences between co-operatives lies in the origins of the farmers that established those industries. While sheep farmers were in general terms wealthy and had access to capital, the more humble dairy farmers' only viable alternative for processing their milk was to set up processing facilities collectively. As a consequence the first dairy co-operative was established in 1871, by the year 1900 there were a total of 111 co-operatives, which increased to over 400 by the 1930s, which followed a path of mergers and acquisitions over the last 40 years that culminated in having today only three dairy co-operatives. However, the main dairy co-operative handles almost the entire New Zealand milk production and marketing.

As a general rule, Maunier (1984) suggests that agricultural co-operatives in New Zealand were established for economic motivations, in other words for defensive purposes. One exception to that pattern would be the Maori co-operatives that can be found in the sheep and beef, horticulture and forestry industries, where employment for tribal members is one of the principal objectives (Donoso, 2003).

2.5.3 AGRICULTURAL CO-OPERATIVES IN BRAZIL

Similar to New Zealand, agriculture plays an important role in Brazil's economy. The country is a world leader in the export of products such as beef, poultry, sugar, coffee and orange juice. In many of these agri-food chains, co-operatives are important as the link between farmers and consumers.

The first agricultural co-operatives in Brazil were established in 1907 in the state of Minas Gerais (Silva et al., 2003). Pinho (1996) points out that in 1932 the co-operative movement became stronger in the country due to 1) Government stimulus – as a method to organise agricultural activities; and 2) Promulgation of the Brazilian Co-operative Law of 1932.

Because of the large geographic area of Brazil's territory, the country is divided into five distinct regions. Each region has different characteristics, therefore the historical processes that culminated in the creation of co-operatives within these regions were also different. One of these regional

dissimilarities is related to the flow of immigrants to each area. In the South and South-East region, many immigrants had had some experience with a co-operative form of business in their home countries – Germans, Italians and Japanese – which contributed to the formation of co-operative organisations with similar structures in these areas (Silva et al., 2003).

In the first half of the twentieth century, agricultural co-operatives were responsible for disseminating the co-operative spirit around the country. The government supported the diffusion of the movement as a way to put into practice its economic policies related to rural areas (Freitas, 2010). In the 1970s and 80s, as a consequence of the large number of local co-operatives, there was an approach to classify this being tier one, operating in the local marketplace, central co-operatives or tier two, were formed to rationalise processes. These central co-operatives contributed to economies of scale and scope. They could be seen in sectors such as dairy, poultry, pork and soy beans (Silva et al., 2003).

In the dairy industry, throughout the twentieth century farmer-owned co-operatives played an increasingly important role. By the end of the 1980s, tier-one co-operatives were collecting about 60 per cent of the milk produced in the country. These local dairy co-operatives provided reliable market access to producers and acted as price-setters in their areas of influence (Chaddad, 2007a).

Following the deregulation of dairy markets and international trade liberalisation in the early 1990s, this was found to substantially alter the competitive environment faced by dairy co-operatives and as a consequence exposed them to increased competition (Chaddad, 2007a). As a result of increased competition from imports and multinational companies, industry consolidation, technological change, and increased bargaining power of retailers, the market share of dairy co-operatives reduced. Nowadays it is approximately 40 per cent of the total milk procurement.

2.6 SUMMARY

Chapter Two looks at literature in the frame of four main areas: 1) Value Chain; 2) Governance Structure; 3) Supply Chain Management; and 4) Co-operatives. Porter's (1985) well-known Value Chain Model and the Global Value Chain framework have profoundly influenced the perception of how

supply relationships work. The old way of doing business based on mass production and adversarial relationship with suppliers is no longer valid. In today's business environment, to remain competitive, firms have to establish governance structures that facilitate efficient control of the business, while allowing the organisation to implement strategies to streamline the entire value chain. Performance of a value chain depends largely on efficient coordination of the activities executed by each chain member; thereby governance structures assume a critical importance in aligning these activities. In that context, another important concept is supply chain management. In this new environment, where the focus is on customer satisfaction, organisations have become more specialised and have searched for suppliers who can provide quality materials at an appropriate price rather than own their source of supply. As a result, the supply chains have turned out to be longer and more complex, being critical for companies to manage the entire network of supply. In addition to these challenges faced by companies, a co-operative which is a form of business organisation in which the members are also the owners, has unique features that need to be taken into consideration when analysing this type of business. A key difference is that while corporate organisations have the single objective of maximising value at company level, co-operatives must maximise value both at the co-operative/firm level and at member level, thus requiring a different approach. Co-operatives play an important role in New Zealand's and Brazil's economy.

CHAPTER THREE

THE CONTEXTUAL ENVIRONMENT – DAIRY INDUSTRY

3.1 INTRODUCTION

The dairy industry is an important economic activity in the global economy. Hemme and Otte (2010) state that data gathered by the International Farm Comparison Network (IFCN) reveals that in 2005 around 149 million farm households throughout the world were engaged in milk production. Assuming a mean household size of five to six, some 750 to 900 million people, or 12 to 14 per cent of the world population rely on dairy farming to some extent. In addition, throughout the world there are more than 6 billion consumers of milk and milk-derived products. Population growth and rising income in emerging countries are significant drivers that have contributed to the increasing demand for dairy products around the globe.

Milk has certain features that distinguish it from other agricultural products and shape its production, processing and trade. As opposed to grain, milk is a bulky and heavy commodity which requires high-cost storage and transportation as it spoils quickly without cooling. Due to the fact that even a relatively large dairy farm cannot individually provide adequate quantities to supply a processing plant, the dairy industries in many countries are organised along co-operative lines (Knips, 2005).

Any assumption and assertion about co-operative governance structures and supply chain management practices must be consistent with accurate information about the co-operatives and the business environment confronting such companies. Waggoner (1994) suggests that many costly errors have occurred because of firms not realising the extent to which industry structure and market characteristics interplay in achieving success. Therefore, this chapter provides a useful foundation for the discussion and observations appearing later in the text. It reviews the basic components of the New Zealand and Brazil dairy industries offering insight into the relevant aspects of milk production and dairy processing companies.

3.2 DAIRY INDUSTRY IN NEW ZEALAND – AN OVERVIEW

3.2.1 MILK PRODUCTION

The first recorded arrival of domestic cows in New Zealand occurred in 1815 when the missionary Samuel Marsden brought a bull and two heifers to the Bay of Islands, located in the North Island. By the 1900s the number of cows had increased to more than 370 thousand animals (Coco, 2003).

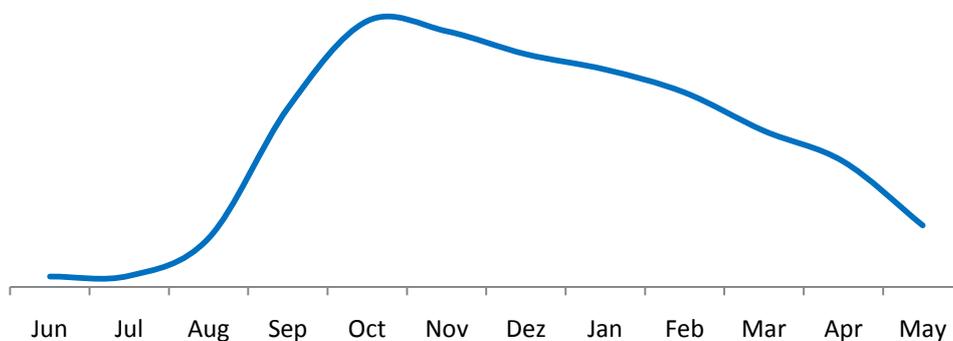
New Zealand's seasonal milk production system relies predominantly on highly productive, rotationally grazed pasture and herds of high genetic merit. It is this system that enables farmers to produce milk at low cost contributing to the country's dairy sector competitiveness (ABARE & MAF, 2006). New Zealand is characterised by a temperate climate that encourages the growth of pasture and enables grazing for twelve months of the year. Indoor housing is not required at any time although supplementary feeding may be beneficial in certain management circumstances (Garrick, Lopez-Villalobos, & Holmes, 2001).

The vast majority of New Zealand dairy herds (97 per cent) supply milk seasonally for manufacturing and export. Cows start milking from late July and are dried off in the following May. The start date varies from late July in Northland to late August in the South Island. The milk production peak occurs in October and November (Figure 3.1), when most manufacturing plants operate at full capacity. The remaining 3 per cent of the herds supply milk year-round for the domestic liquid milk market. Farmers contracted to supply milk during the winter months are paid a premium price above their usual payments (ABARE & MAF, 2006).

To better understand the country's milk supply characteristics it is necessary to analyse the regional distribution of dairy cows and to identify which are the main dairy areas. The North Island accounts for about two-thirds of all cows, while the South Island the remaining one-third (Figure 3.2). The majority of dairy herds are located in the North Island, with the greatest concentration situated in the South Auckland region. This region is an important dairy area where the warm, humid climate and

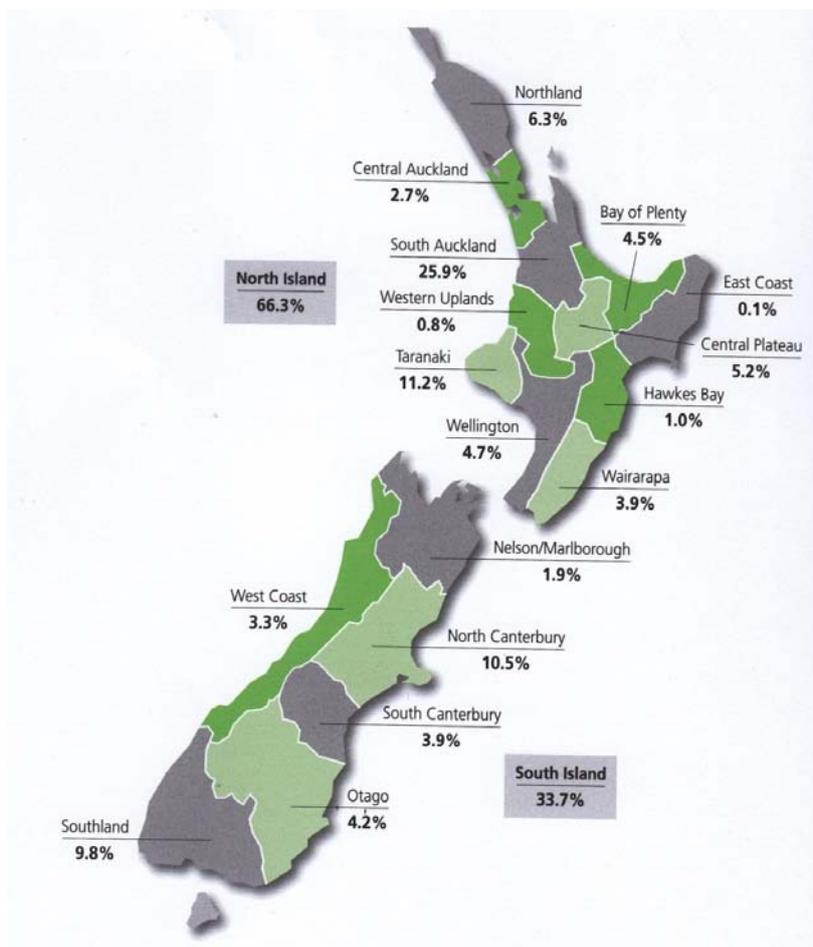
volcanic soils make it one of the most productive grass growing regions in the world and New Zealand's foremost dairy region (ABARE & MAF, 2006).

Figure 3.1: Seasonal pattern of New Zealand's milk production, 2006/07.



Source: Adapted from NZX Agrifax (2009).

Figure 3.2: Regional distribution of dairy cows in New Zealand, 2008/09.

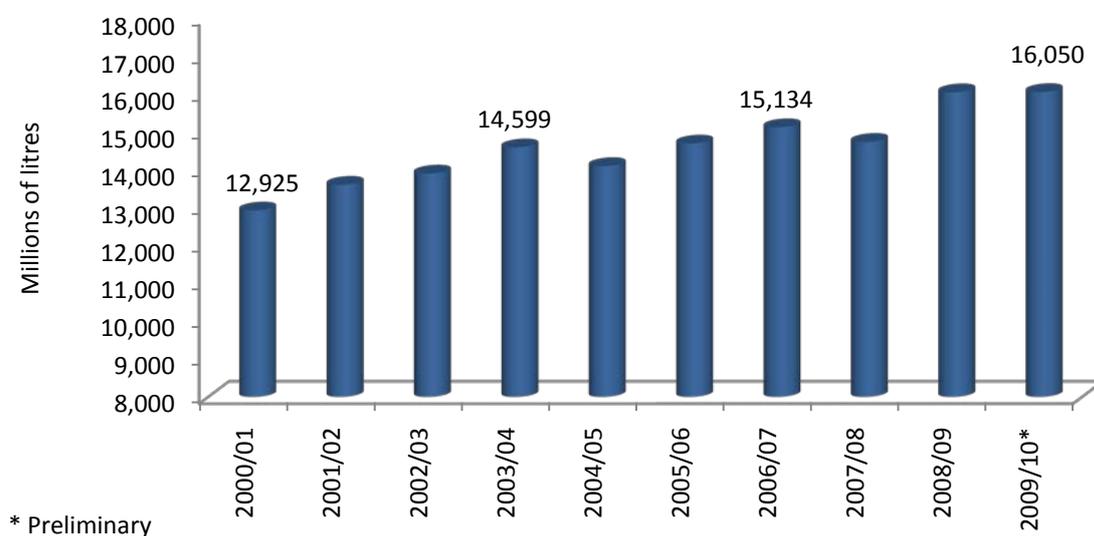


Source: LIC & DairyNZ (2009).

Despite the fact that the milk supply is greater in the North Island, since the 1990s the South Island's production has been growing steadily. Conversion of sheep and beef farms into dairying is the main driver for this growth. Although the average herd size in both islands continues to increase, farms in the South Island are, on average, larger than those in the North Island in terms of both cow numbers and farm area. In the 2008/09 season, the average herd size in the North Island was 314 cows, while in the South Island that number increased to 546 cows (LIC & DairyNZ, 2009).

In the 2009/10 season, ended 31 May 2010, New Zealand's milk production was estimated at approximately 16 billion litres. This roughly maintains the previous season's production. Drought in some regions of the country, especially the North Island, affected milk output, however increased milk production in the South Island helped to sustain the total milk supply. Over the past ten seasons the country's milk production has been increasing at an average annual rate of about 2.5 per cent (Figure 3.3).

Figure 3.3: New Zealand's milk production, 2000-2010 in millions of litres.

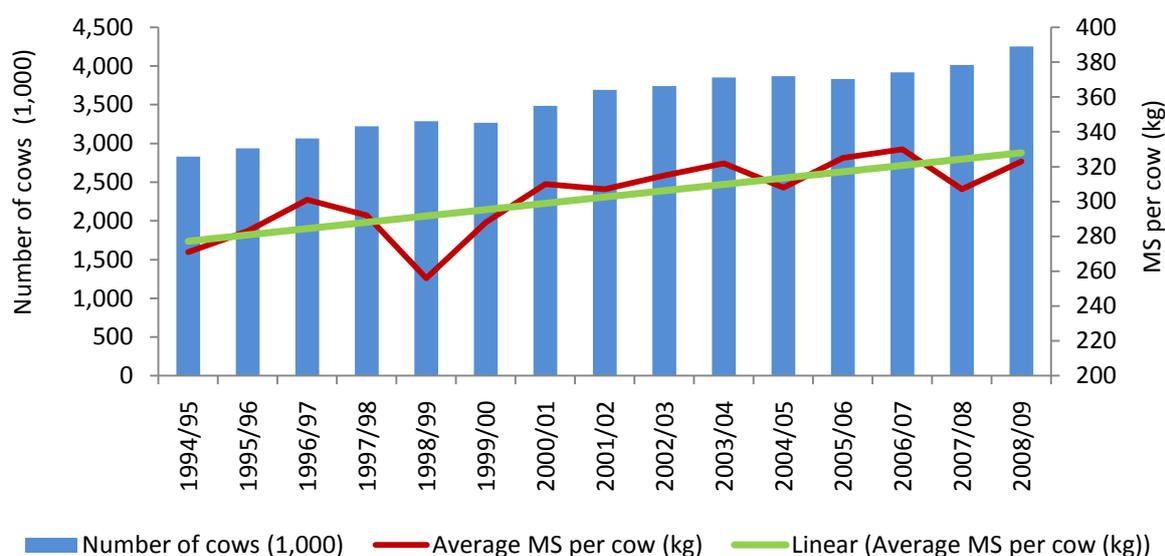


Source: Adapted from LIC & DairyNZ (2009).

The boost in milk production is a result of increased milk solids (MS) production per cow, coupled with an increase in the number of cows milked (Figure 3.4). The trend to increased milk solids production per cow over recent years is partly due to genetic gain and partly due to improvements in farm

management (LIC & DairyNZ, 2009). Variations from season to season are masked by the considerable effect of the weather on each season's actual production. As regards the total cow population, in the 2008/09 season it was 4.253 million, representing an increase of 6.0 per cent over the previous season. During recent seasons the number of cows has increased from 2.831 million in the 1994/95 season to over 4 million animals.

Figure 3.4: Number of cows and milk solids production per cow in New Zealand, 1994-2009.



Source: Adapted from LIC & DairyNZ (2009).

3.2.2 DAIRY PROCESSING COMPANIES

The dairy sector in New Zealand evolved around co-operative principles and the origin of this major export industry can be traced back to the first years of European settlement in the country (Coco, 2003). The first dairy co-operative was formed in 1871 with the purpose of manufacturing cheese. Like co-operatives around the world, it was established by a group of farmers to benefit from the power of pooled resources. By the 1930s the number rose to more than 400 dairy companies operating in different regions of the country (Fonterra, 2010a).

The marketing and export of dairy products were initially conducted by individual co-operatives, many of which had agents and offices overseas. However, it became increasingly difficult for hundreds of small dairy companies to service foreign markets. Therefore, in 1923 the Government established the Dairy Industry Produce Control Board to control all dairy exports, creating a system of group marketing and increasing the efficiency of marketing arrangements (Waggoner, 1994). The Dairy Control Board gave companies the power to access new markets and to earn better returns for their products.

The period between the 1930s and 1960s was represented by growth and industry consolidation. Co-operatives began joining forces to become more efficient, aided by improved technologies in transport and refrigeration. These included whole milk collection by tanker from 1951, and cooling of milk on-farm introduced in 1955 (Fonterra, 2010a). By the 1960s the 400 co-operatives which were present in the 1930s had decreased to 168.

The consolidation trend, seen equally in the food and retail industries worldwide, continued the amalgamation process in the following decades. By 1996 there were only 12 dairy co-operatives, which reduced to four by the end of 2000. At this stage more than 95 per cent of the industry was represented by two major companies: New Zealand Dairy Group and Kiwi Co-operative Dairies; Westland Milk Products and Tatua Co-operative held the remaining 5 per cent.

In March 2000 there was an attempt to merge the two largest co-operatives and the New Zealand Dairy Board⁵ (NZDB). However, the move failed because of government opposition, disagreement on the management structure of the proposed new company and different views on the valuation of the companies. A year later, in July 2001, farmers involved voted to accept the merger of the New Zealand Dairy Board, New Zealand Dairy Group and Kiwi Co-operative Dairies, which created Fonterra Co-operative Group. To solve potential internal conflicts, Fonterra was set up as a new company that bought the assets of both co-operatives and the NZDB (Fonterra, 2010a).

⁵ In 1961 the government established the New Zealand Dairy Board, the structure that would, apart from minor alterations, last until 2001. The organisation enjoyed statutory power to acquire and market all dairy products for export (Coco, 2003).

Nowadays, Fonterra handles about 92 per cent of total milk production, being an important part of the sector. The Group is New Zealand's largest business, accounting for about one quarter of the export earnings of the country (Gray & Heron, 2010). The co-operatives Westland and Tatua remain independent, focusing on specific niches of the international market.

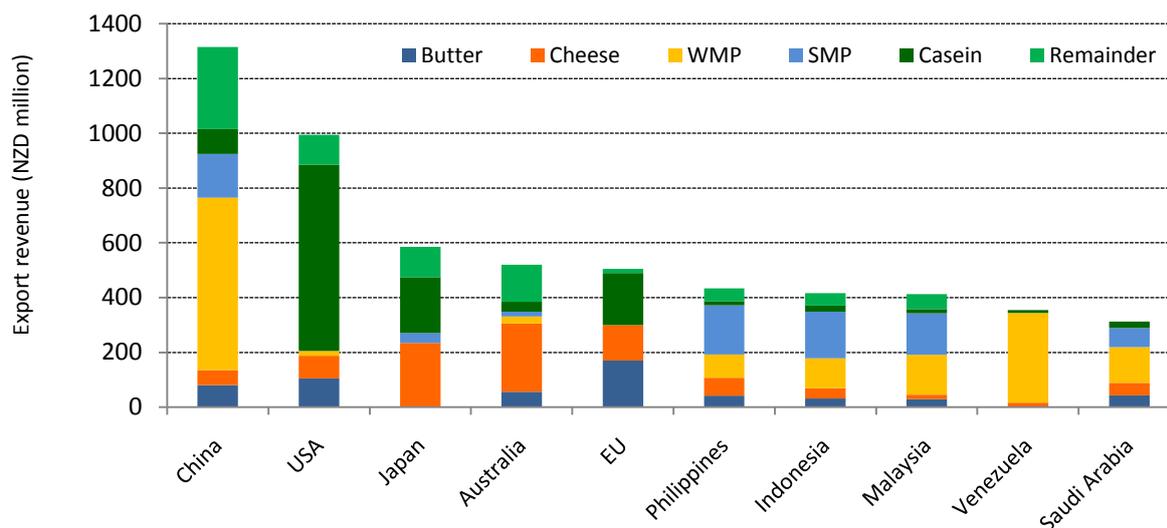
To ensure that small processors are not forced out of the market, the Government, in 2001, promulgated The Dairy Industry Restructuring Act (DIRA) which requires Fonterra to supply up to 400 million litres of regulated milk, at a default milk price, to other independent milk processors (ABARE & MAF, 2006). The DIRA also removed the single-desk selling status of the NZDB, allowing independent dairy companies to produce and export New Zealand-made dairy products. As a result, in 2005, the private company Open Country Cheese began operations, followed by Synlait Milk, also a corporate company which started up its business in 2008. Another new entrant in the milk manufacturing arena is Oceania Dairy Group, which might start operations in the 2011/12 season with a dairy processing plant in South Canterbury.

A significant characteristic of New Zealand's dairy processing companies is their export-led nature. Knips (2005) points out that the world dairy sector is very localised, as milk is a bulky and perishable product, and dairy products are mostly consumed within the country or region where they are produced. Consequently only a small fraction of global production is traded internationally, approximately 7 per cent. However, as a result of New Zealand's relatively small population, about 4 million people, and small domestic market for dairy products, 95 per cent of manufactured dairy products are exported. The country's share of the world dairy trade is significant, approximately one-third of all products traded internationally.

New Zealand dairy exports went to 151 countries during the year ended 31 December 2009, with key markets in China, the United States, Japan and the European Union (Figure 3.5). Overall, developing countries are the destination of about 72 per cent by export value. The mix of exported dairy products varies by country of destination. Whole milk powder (WMP) and skim milk powder (SMP) are predominantly exported to developing countries, while butter, cheese and casein are mainly exported to developed countries. China has rapidly increased its purchases from New Zealand, following the

fall in Chinese consumers' confidence in their domestic milk products and the strong Chinese economy (MAF, 2010).

Figure 3.5: New Zealand dairy export values by key market destination, year ended 31 December 2009.



Notes

- (1) Butter includes butter oil.
- (2) Skim milk powder (SMP) includes buttermilk powder and infant powder.
- (3) Casein includes caseinates, albumin and milk protein concentrates.
- (4) Remainder comprises ingredients and preparations, liquid products and other dairy products.

Source: MAF (2010).

3.3 DAIRY INDUSTRY IN BRAZIL – AN OVERVIEW

3.3.1 MILK PRODUCTION

The first recorded arrival of cows in Brazil occurred in 1532 when the expedition headed by the Portuguese Martim Afonso de Sousa reached the Brazilian coast, disembarking into the mainland both people and a diverse range of animals, among them thirty-two head of cattle (Dias, 2006). From their arrival, the cattle herds started to increase, spreading into the west and south, slowly expanding the Brazilian frontiers.

In 1945 the government began to regulate the dairy industry, where the price for milk was manipulated in order to control the cost of living. The regulation remained until 1991. Martins (2004) suggests that during that period the dairy sector suffered the consequences of government intervention. The period was characterised by a small milk production increase, poor animal welfare and breeding techniques and limited adoption of best on-farm practices. In addition, the high instability of the milk price over that period was an obstacle to investment in technology and modernisation.

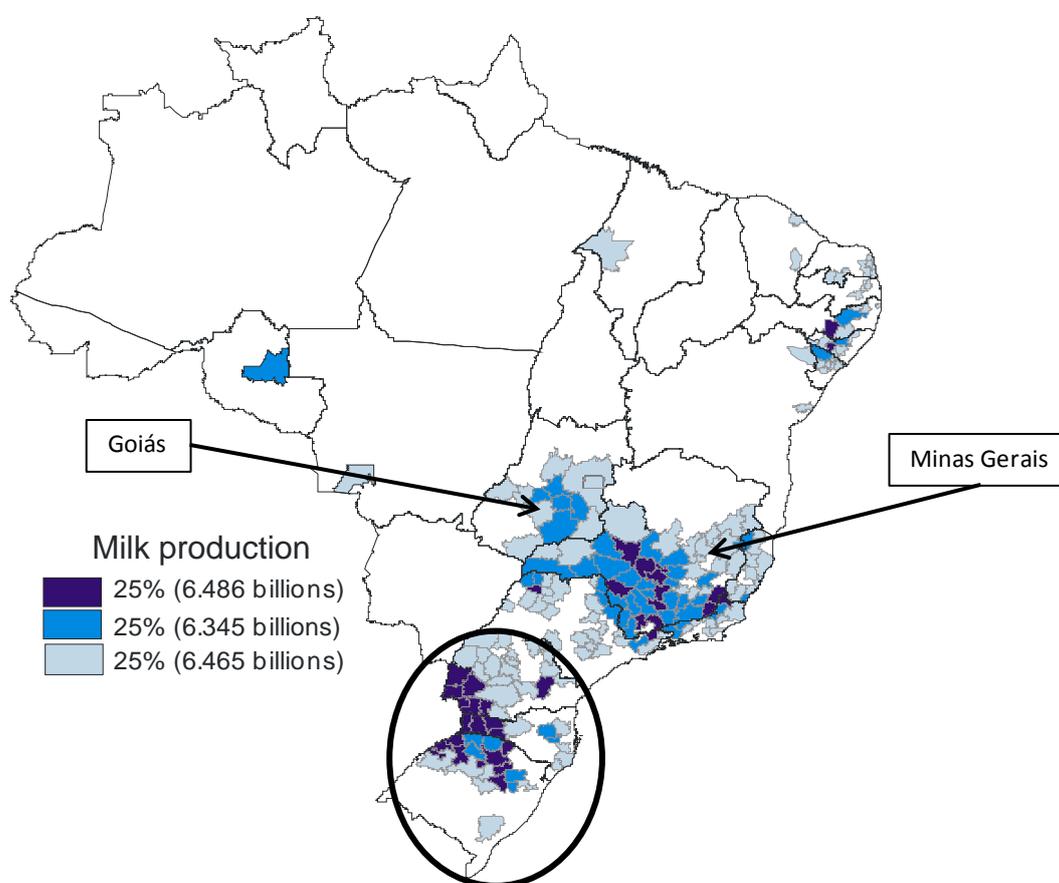
Following the deregulation of dairy markets and international trade liberalisation in the early 1990s significant changes have shaped the dairy industry. As regards the milk production aspects, the milk supply has been increasing steadily, while the South and Central-West regions have increased their contribution to the total production of the country. As well, milk quality has improved as a result of the implementation of the IN 51, a regulation issued by the Ministry of Agriculture that set a national standard for milk quality — formally introduced in 2005.

Currently, Brazil has approximately 1.2 million dairy farms across the country. Almost two-thirds of this total is concentrated in the Centre-South region, with an important proportion in the state of Minas Gerais, the largest milk producer state. Each region has its own distinct milk production structure. The southern region is characterised by small farms, while towards the Centre-West, farms tend to be larger (Rabobank, 2008).

Milk production is a fragmented business in Brazil, where the majority of farms are small, with low or even no access to capital. Small farms and those medium farms which are not totally focused on milk production represent the majority of dairy farms within the country. According to Stock et al. (2007), these two groups represent about 90 per cent of the dairy farms, however they are responsible for only 20 per cent of the total milk supply. On the other hand, medium-to-large-scale farms which correspond to approximately 10 per cent of the farms are responsible for the remaining 80 percent of Brazil's production. It is worthwhile emphasising this heterogeneity of milk production systems, where on one hand there are smallholders producing less than 100 litres of milk per day, while on the other hand there are highly specialised, world-class producers producing more than 30 thousand litres per day.

Zoccal and Carneiro (2008) reveal that there are regions in Brazil where dairying is more concentrated. Figure 3.6 discloses the areas which together were responsible for 75 per cent of Brazil's milk production in 2007. Three regions have crucial importance: The southern states, Minas Gerais state and Goiás state. The five states that comprise these regions are the largest milk producers. As previously mentioned, milk production systems vary significantly among these regions, as does climate, type of soil and precipitation level.

Figure 3.6: Regional distribution of milk production in Brazil, 2007.

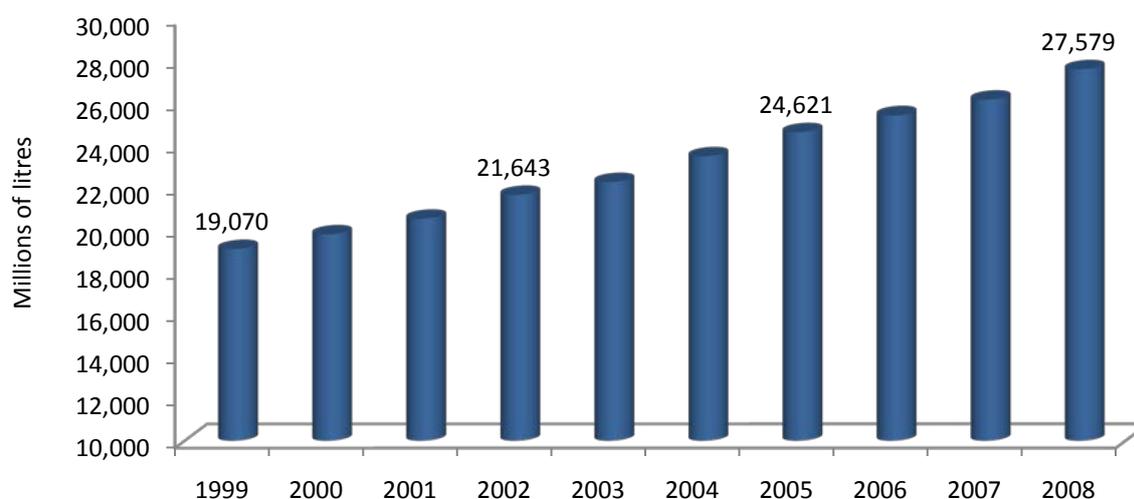


Source: Zoccal & Carneiro (2008).

In 2008 Brazil's milk production was estimated at about 27 billion litres, representing an increase of 5.5 per cent over the previous year. In the past ten seasons the milk production of the country has been increasing at an average annual rate of about 4.5 per cent (Figure 3.7). Of the total milk production, approximately 66 per cent is formally inspected by the local government, 20 per cent is estimated to be neither controlled nor inspected, while 14 per cent is consumed on-farm, principally

by dairy calves. While the level of informality is still high, procedures are becoming stricter over time. More professionalism within the dairy chain, better control over the production sector and improvements in inspection programmes are being implemented by both companies and the local government (Rabobank, 2008).

Figure 3.7: Brazil's milk production, 1999-2008 in millions of litres.



Source: IBGE (2010).

3.3.2 DAIRY PROCESSING COMPANIES

The foundation of Brazil's dairy industry can be traced back to the 19th century. The first dairy company was established in 1888 by Carlos Pereira de Sá Fortes in Santos-Dumont, located in the state of Minas Gerais. By the 1900s the number of milk processors in the region of Santos-Dumont had increased to forty-five firms, making the district the foremost dairy region of the country. By the 1930s the number of dairy factories in Minas Gerais had increased to 965, where co-operatives were significant (Dias, 2006).

Between 1930 and 1942 the Brazilian President, Getúlio Vargas, encouraged the formation of co-operatives. Dairy co-operatives were established to provide farmers with supplies at affordable prices, provide missing services (such as credit and technical assistance) and to counteract the

market power of buyers or to facilitate access to urban markets (Chaddad, 2007a). Dias (2006) points out that by the 1970s there was a rise in the number of foreign corporations in Brazil's dairy sector which collaborated in developments in milk processing technologies and management practices. However, it was after the deregulation of the dairy markets in the early 1990s that the dairy industry started to experience profound modifications such as increased mergers and acquisitions, implementation of a bulk milk collection system and increased attention to milk quality aspects.

Data from the Ministry of Agriculture reveals that there are about 1,680 milk processing plants with formal federal inspection in Brazil. More than 80 per cent are located in the Centre-South region, which accounts for 76 per cent of the country's GDP and 62 per cent of the population. Dairy processors can be divided into three main groups according to their strategy. The first group consists of leaders which market products protected by entrance barriers, such as product patents or brand or marketing expenses, focusing on high-end products. The second are companies that are in competitive markets with low product differentiation, focusing on the medium-to-low-income population. Lastly, there are the smaller processors, the majority of the dairy companies, which have a presence only in their local geographic market (Rabobank, 2008).

The top ten dairy processors handle about 42 per cent of the total milk delivered in Brazil, revealing that the industry is still fragmented (Table 3.1). Prior to 1991, co-operatives were responsible for collecting about 60 per cent of the milk produced in the country. However, following the deregulation of dairy markets and international trade liberalisation, which substantially altered the competitive environment faced by dairy co-operatives and exposed them to increased competition, dairy co-operatives entered a difficult period with declining profits and market shares (Chaddad, 2007a). As a result of increased competition from imports and multinational companies, industry consolidation, technological change, and increased bargaining power of retailers, the market share of dairy co-operatives declined. Nowadays it is approximately 40 per cent of total milk procurement.

Table 3.1: Brazil's top 10 dairy processors by milk intake, 2009.

Rank	Company name	Milk intake (in 1,000 litres)
1	DPA	2,050,000
2	BRASIL FOODS (1)	1,671,108
3	BOM GOSTO	1,224,054
4	ITAMBÉ	1,125,000
5	PARMALAT	470,021
6	LEIT BOM	420,641
7	EMBARÉ	398,590
8	LATICINIOS BELA VISTA	388,027
9	CENTROLEITE	322,757
10	DANONE	254,469

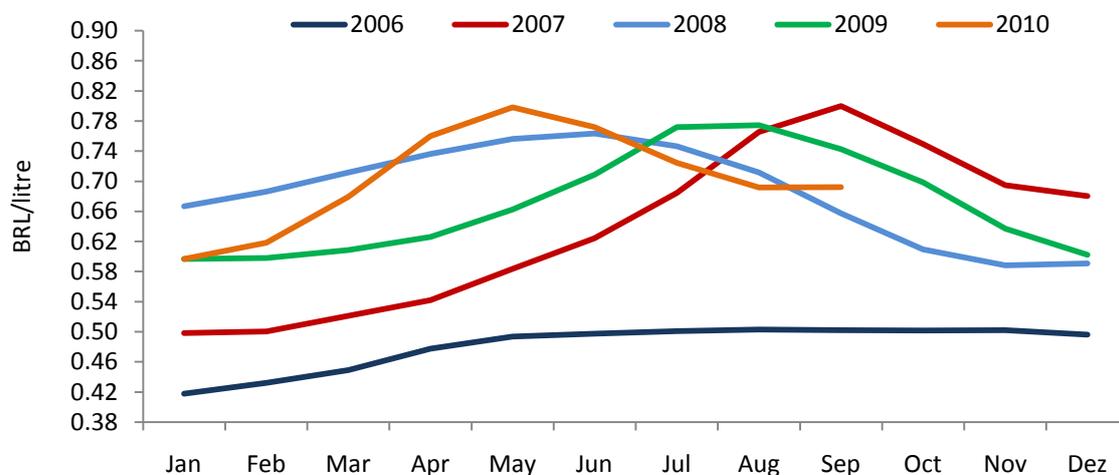
Note

(1) Data from 2008.

Source: Adapted from Carvalho & Carneiro (2010).

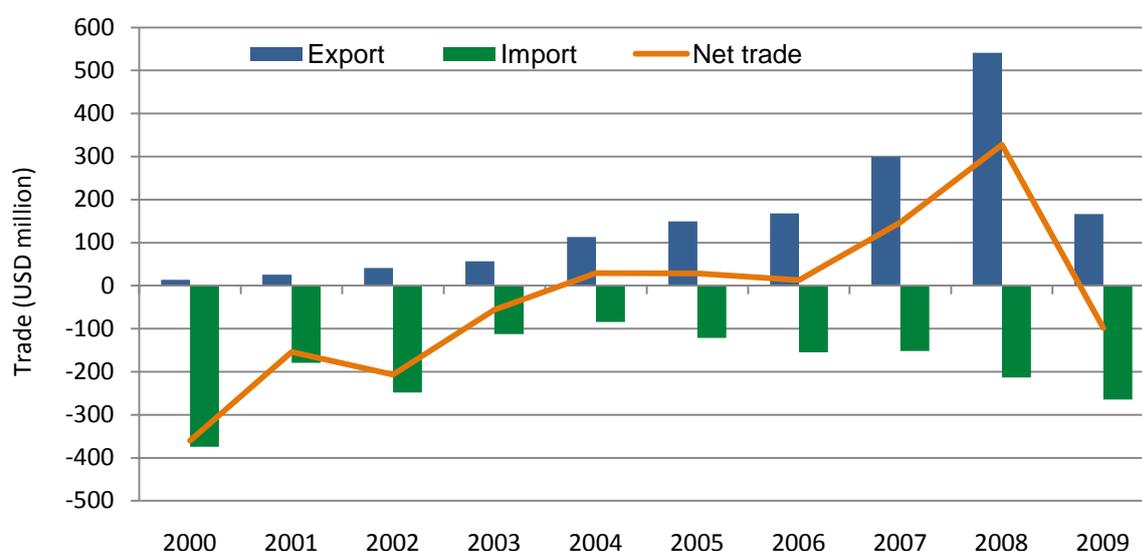
A crucial feature of the dairy industry in any country is the milk price, since it can significantly benefit or harm the sector. Figure 3.8 shows the volatility in the farm-gate milk price in Brazil in the past five years. As can be noted, the milk price variation between the years and between the months of the same year is significant, which makes it harder for members of the dairy value chain, including farmers, processors and retailers, to do long-term planning. Basically, every year has a different pattern.

The critical factors that influence the farm-gate milk price are Brazil's milk production seasonality, consumer demand, the foreign exchange rate and competition from other dairy companies. It is noteworthy that the fierce competition among dairy processors in relation to milk supply creates a certain level of instability in the market, reflected in rapid upward or downward changes in the farm-gate price.

Figure 3.8: Average farm-gate milk price in Brazil, 2006-2010 in BRL/litre.

Source: CEPEA (2010).

As regards the international market, during the 1990s Brazil used to be one of the largest importers of dairy products in the world (Martins, 2004). However, since 2000 exports have risen steadily, culminating in 2004 in the country becoming a net exporter for the first time in its history (Figure 3.9). However, in 2009, as a consequence of the global economic crisis and the appreciation of the Brazilian currency, the country had a net trade deficit on dairy of USD 98 million.

Figure 3.9: Brazilian dairy trade, 2000-2009 in USD million.

Source: Adapted from Carvalho & Carneiro (2010).

Despite the increased interest of Brazilian dairy companies in the international market, Brazil's large population (about 192 million people), vigorous economic growth in recent years and relatively small per capita consumption of dairy products reveal a good scenario on the domestic market. To participate in a better position in the global market Brazil's dairy industry might have to evolve more towards having a coordinated industry, where members of the dairy value chain work together, enhancing the performance of the entire sector, instead of seeking just individual gains.

3.4 SUMMARY

Following the literature review provided in Chapter Two, this Chapter focuses on the dairy industry in New Zealand and Brazil, looking at milk supply situation and the main dairy companies present in each country. The countries' dairy industries have different characteristics and levels of maturity. On one hand there is New Zealand, which is the world's largest dairy exporter, having a highly consolidated industry, producing annually about 16 billion litres of milk by approximately 12,000 dairy farmers. On the other hand, there is Brazil, which still has a fragmented industry, producing about 27 billion litres of milk by approximately 1.2 million dairy farmers. The observed governance structures and supply chain management practices adopted by the two studied dairy co-operatives could not be properly explained without an understanding of this contextual environment.

CHAPTER FOUR

DESIGN AND METHOD OF RESEARCH

4.1 INTRODUCTION

The selection of the most suitable method for answering the research question is a critical aspect of any research (Billones, 1999; Williams, 1997). According to Holbert and Speece (1993), the research method and design is about how to get what the researcher determined he needs to obtain. The choice of research method depends on the type of research question to be answered and the degree of control the researcher has over the subject to be investigated (Yin, 2009).

This chapter describes the techniques used for data collection and subsequent analysis. The selection and justification of the research method is discussed in Section 4.2. Next, attributes of research design are presented, focusing on: 1) case study research method; 2) ensuring quality in case study research; and, 3) selection of case studies. Finally, in Sections 4.4 and 4.5 the data collection procedure and data analysis processes are described.

4.2 RESEARCH METHOD

The objective of this research project is to better understand the governance structures and supply chain management practices present in the dairy value chains in New Zealand and Brazil, thereby investigating how they affect the relationship between dairy farmers and their co-operative. Governance and supply chain management studies in the agri-food industry frequently relate to all linkages of the value chain (Gellynck & Molnár, 2009; Meridian Institute, 2009; Taylor, 2006). However, this study focuses only on the interface between the co-operative and its supplier-shareholders.

Because of the research focus on governance of dairy co-operatives and the need to explore the interaction between governance structures, supply chain management practices and the relationship between the co-operative and its members, a qualitative research approach was deemed appropriate.

A multi-case study was adopted so as to be able to provide significant detailed information in a holistic investigation of the situation.

Leedy and Ormrod (2001) point out that qualitative research often starts with a loosely defined research problem and as the study progresses the researcher gains better understanding of the studied phenomenon, being increasingly able to ask specific questions. Donoso (2003) suggests that qualitative studies evolve over the course of the investigation, as has been the case in this research project.

Qualitative data is that which is non-numerical, and it is usually obtained through any one of a variety of different research methods that range from unstructured to semi-structured in their approach (Biber & Leavy, 2004). These methods include interviews using all (unstructured) to a few (semi-structured) open-ended questions, focus groups, intensive interviews, participant observations and field notes.

The rapid development of supply chain management as a field of research has so far not been matched by related developments in research methodologies. A full range of research methodologies can be applied in supply chain management, and the use of case study research is an interesting and efficient option (Seuring, 2005). Stuart, McCutcheon, Handfield, McLachlin, and Samson (2002) suggest that case studies are an appropriate research methodology to map the field of supply chain management, as they allow identification and description of critical variables.

Yin (2009) states that a case study is an empirical enquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident. The advantage of the case study approach is its ability to address “why” and “how” questions in the research process (Ellram, 1996; Meredith, 1998; Yin, 2009), as is the case in the main research question of this study. In that context, for the purpose of this research it was concluded that a qualitative research using multiple case studies was the most suitable method.

4.3 RESEARCH DESIGN

The research design represents the framework of scientific study, offering guidance and rules to the way practical questions regarding sampling criteria, data collection and data analysis are to be answered (Coco, 2003). The initial research design has a direct influence on the quality of later research stages. However, according to Royer and Zarlowski (2001) design should not be inalterable. Indeed, topics such as governance, supply chain management and buyer–supplier relationship are characterised as dynamic topics, which require flexibility and evolution of design.

The research method literature suggests that there are three types of case study research: 1) descriptive – which presents a complete description of a phenomenon within its context; 2) explanatory – which comprises data bearing on the cause and effect relationship, explaining how events happened; and, 3) exploratory – which is aimed at defining the questions and hypothesis of a subsequent study or at determining the feasibility of the desired research procedure (Leedy & Ormrod, 2001; Yin, 2009). This multiple case study is characterised as exploratory, as it explores the reasonably unknown relationship between governance structures, supply chain management practices, and co-operative and farmer-shareholder interaction.

This exploratory multi-case study adopted narrative and analytical techniques from the qualitative approach. Two dairy companies were studied, one based in New Zealand and another located in Brazil. The two cases have substantial importance to their countries' dairy industry, are producer organisations of the co-operative type and each one has more than 8,000 milk suppliers. However, they also have dissimilarities. The cases are from different countries, have different amounts of revenue, and have different forms of ownership structure.

4.3.1 CASE STUDY RESEARCH

A case study is a study in which one case (single-case study) or a small number of cases (multiple-case studies) in their real life context are selected, and scores obtained from these cases are analysed in a qualitative manner (Dul & Hak, 2008). Coco (2003) suggests that the main strength of

the case study method is its ability to deal with a full variety of evidence, from documents and archival records to interviews and observations or any combination of these.

Yin (2009) claims that applying a flexible, sometimes even opportunistic research strategy is one of the major strengths of case study research. Nonetheless, Stuart et al. (2002) argue that it might also be considered a weakness. Therefore, it is necessary to strike the right balance between flexibility and strictness.

In accordance with Yin (2009) and Donoso's (2003) guidelines for undertaking case study research, a case protocol was developed, which consists of the following parts:

1. Procedures

- Review of co-operative preliminary information (website, annual reports, media coverage).
- Determination of people to be interviewed.
- Development of a case study database.

2. Interviews

- Semi-structured interview (45 minutes to 1 hour in length), using open-ended questions.

3. Analysis plan and report

A. Individual case studies

- Descriptive information.
- Analysis.
- Outline of individual draft reports.
- Revision by key informants.
- Final individual case study reports.

B. Cross-case analysis

- Descriptive information.
- Analysis.
- Cross-case report.

4.3.2 ENSURING QUALITY OF CASE STUDY RESEARCH

One of the main concerns in case studies is related to a lack of rigour during the research design (Donoso, 2003). The quality of the research design is ensured by aiming for validity (i.e., is the stated evidence valid?), and reliability (i.e., is the stated evidence correct?) (Seuring, 2008; Stuart et al., 2002; Yin, 2009). According to Coco (2003) validity relates to aspects of the entire research — internal and external validity — and to aspects of individual components of the research — construct validity. On the other hand, reliability basically refers to whether a study is replicable by a different researcher at another point in time producing equivalent results. The main goal of reliability is to minimise the errors and bias in a study (Gray, 2001).

For case study research, Yin (2009) outlines how validity and reliability of the research can be ensured. He suggests three types of validity: construct validity, internal validity and external validity. These three types of validity are applied during different stages of the research process. Reliability and validity are ensured by a clearly structured research method. As proposed by Yin (2009) the following case study tactics were used in order to ensure the quality of the research.

- I. **Use multiple sources of evidence** – Interviews were conducted with different people from company personnel to farmer shareholders. Likewise, secondary data was collected from different sources, such as company reports, websites, conference proceedings, academic case studies and general reports on the dairy industry.
- II. **Have key informants review draft case study report** – Draft reports were sent to key informants (two on each case).

- III. **Use replication logic in multiple case studies** – Both cases selected are from the same industry, are producer organisations of the co-operative type, and basically engaged in similar activities.
- IV. **Use case study protocol** – Study protocol was developed as previously described in Section 4.3.1.
- V. **Develop case study database** – A database was created and data was classified according to the following categories: 1) Information retrieved from company websites; 2) Company annual reports and publications; 3) Conference proceedings; 4) Company reports by research groups; 5) Company news; 6) Academic case studies; 7) General reports on the dairy industry.

4.3.3 SELECTION OF CASE STUDIES

Similarly to quantitative studies, the objective of sampling in case studies is to determine the minimum size that will enable a satisfactory level of confidence in the results (Angot & Milano, 2001; Coco, 2003). Yin (2009) alleges that the replication logic in qualitative research is comparable to that of multiple experiments, with each case corresponding to one experiment. The number of cases required for research depends on two criteria, the desired degree of certainty, and the magnitude of the observed differences (Angot & Milano, 2001).

As previously mentioned, the present study is a multiple case study in which the researcher analysed two companies. Both companies are considered the main dairy co-operative in their home country⁶ and have a vital role in the dairy industry. Furthermore, due to their significant size, the cases studied have remarkable importance in guiding the national dairy industry in their countries to innovative forms of governance and supply chain management practices.

The two dairy co-operatives analysed as case studies for this research are:

- Fonterra Co-operative Group
- Cooperativa Central dos Produtores Rurais de Minas Gerais (CCPR/Itambé)

⁶ Home country refers to the location of corporate headquarters.

Of the two selected case studies one, Fonterra Co-operative Group, is situated in New Zealand and the other, Cooperativa Itambé, is located in Brazil. The selection of the case studies was based on their reasonable similarity in terms of number of milk suppliers, the co-operative form of business, their major importance to their country's dairy industry, and the fact that they are located in the world's top dairy exporting country — New Zealand — and the country considered by some experts as a key future exporter of milk-derived products — Brazil. Therefore, it is the researcher's belief that interesting insights can be drawn from a cross comparison of the cases.

4.4 DATA COLLECTION

For each case study, data was collected from primary and secondary sources. Primary data was obtained from interviews with representatives of the co-operatives, including senior executives and management staff. Additionally, interviews were carried out with farmer-shareholders from each company. The Constitution from both co-operatives were requested and obtained, either in hard copy or on company websites. It is worthwhile mentioning that the researcher also had access to publications specifically addressed to the co-operatives' members, such as Suppliers' Handbook and Shareholders' Magazine.

Interviews were semi-structured, with open-ended questions. This kind of interview follows a certain set of questions and assumes a conversational manner. The interviews were divided into two groups: 1) Co-operative personnel; and 2) Co-operative farmer-shareholders. The main objective of the Group 1 interviews was to get a better understanding about the co-operative governance structures and supply chain management practices. Also, through the interviews the researcher tried to gain an understanding of how these variables could influence the relationship between the company and its members. Moreover, interviews with the co-operative's farmer-shareholders were also carried out. These interviews were aimed at better understanding the farmers' views regarding their co-operative and how the governance structures and supply chain management practices that are in place could affect their relationship with the organisation.

Semi-structured interview guidelines were used during the interviews. Because of differences in company participants' backgrounds and functions performed within the organisation, the questionnaires conducted were not identical and were only used as a checklist to make sure that all necessary topics were covered. However, the questionnaires conducted with dairy farmers were exactly the same, since all are engaged in the same activity. The interviews were mainly focused upon six distinct topics which are illustrated in the figure below.

Figure 4.1: Interview framework.



*Supply Chain Management.

Interviews were pre-arranged by telephone or email, and undertaken from March to August 2010. The length of the interviews was approximately 45 to 60 minutes each, and the location depended on the individual interviewees' preferences. Interviews were tape-recorded, with the consent of the participant.

A total of eleven people were interviewed from each case company, comprising five co-operative personnel and six dairy farmers. A draft list of key people to be interviewed for this research was drawn up, and after establishing the availability of potential participants a final list was designed. In relation to farmer-shareholders, in New Zealand the researcher established contact with a dairy farmer and a consulting company who in turn facilitated further introductions. In Brazil, in order to avoid logistics problems and due to the restricted period of time to conduct the interviews, the case company was responsible for choosing the farmers. Despite both organisations having a different size and structure, a similar pattern was followed (Table 4.1).

Table 4.1: Cases studies' interview participants.

Fonterra Co-operative Group	Cooperativa Itambé
Group Manager Policy and Compliance	President
General Manager Milk Supply	President's adviser
Councillor - Head of Governance and Ethics Committee	Member of the Board of Directors - President of local co-operative
Shareholders' Council Manager	General Manager Milk Supply
Supplier Services Team Leader	General Manager Supply
Dairy farmers (6)	Dairy farmers (6)

Secondary data collected for this study included: 1) Information retrieved from company's website and publications; 2) Company's news; 3) Company's reports written by research institutions; 4) Academic literature; 5) General reports on the dairy industry; 6) Conference proceedings.

The researcher also attended three international dairy conferences – “China World Dairy Expo and Summit”, “The Americas' Dairy Forum”, and “IDF World Dairy Summit” – all held in 2010. The China World Dairy Summit took place in Qingdao, China, between 8th and 10th June. The Americas' Dairy Forum was held in Juiz de Fora, Brazil, between 12th and 15th July. This conference was part of a larger event which is considered the main dairy event in Latin America. The IDF World Dairy Summit was organised by the International Dairy Federation (IDF) and was held in Auckland, New Zealand,

between 8th and 11th November. During the three conferences the researcher attended seminars where “Dairy policies & economics”, “Dairy co-operatives”, “Dairy leaders”, and “Challenges for the world dairy industry” were explored. All conferences were crucial to wider understanding of the broad context in which the dairy industry operates, from milk production concerns and projections to international dairy policies and economics. Furthermore, the conferences provided up-to-date information regarding how dairy processors worldwide are setting up their governance structures and supply chain management practices.

4.5 DATA ANALYSIS

Data analysis is a crucial part of any research. Yin (2009) considers that data analysis is one of the least developed aspects of case study research, since there are few standardised procedures for the analysis of case study data. Rowley (2002) also claims that there are no defined procedures that have been agreed for the analysis of case study results, but he suggests that good case study analysis adheres to the following principles:

- I. Make use of all relevant evidence.
- II. Consider all of the major rival interpretations and explore each of them in turn.
- III. Address the most significant aspect of the case study.
- IV. Should draw on the researcher’s prior expert knowledge in the area of research, but in an unbiased and objective manner.

In the present study, interviews were tape-recorded and later fully transcribed. Following Donoso’s (2003) approach, information was then coded and analysed to identify key factors and conceptual themes (categories), so as to condense the information gathered. All raw data (interviews) and analysed data (codified information) were saved in independent files.

Once the within-case analysis was elaborated based on the primary and secondary data collected, a cross-case analysis was performed, comparing similarities and differences found between the two

case studies. Results of the single cases and cross case analysis were then evaluated within the framework of current theory.

4.6 SUMMARY

Chapter Four describes the research techniques and methods that guided this research endeavour. The objective of this study is to investigate how governance structures and supply chain management practices may influence the relationship between dairy farmers and their co-operative. A multiple-case study was the selected methodology and data was collected from primary and secondary sources. Primary data was obtained from interviews with representatives of the two studied co-operatives and dairy farmers, while secondary data collected included academic literature, company reports, newspaper and magazine articles and the Internet. Data obtained is analysed in the following Chapters of this text, where individual case study reports are presented in Chapter Five and a cross-case analysis is performed in Chapter Six.

CHAPTER FIVE

CASE STUDIES

5.1 INTRODUCTION

The results of this research project are presented in two Chapters. Chapter Five comprises two individual case study reports, revealing information about the companies' backgrounds, governance structures, supply chain management practices and their relationships with milk suppliers. Chapter Six provides a discussion of significant issues emerging from observation of the real-life situation of the companies.

The case study analysis provided the researcher with an understanding of each company as a stand-alone entity depicted in the context of its environment.

5.2 FONTERRA CO-OPERATIVE GROUP

5.2.1 COMPANY OVERVIEW

Fonterra Co-operative Group Limited (Fonterra) is a co-operative company incorporated and domiciled in New Zealand. The Group is primarily involved in the collection, manufacture and sale of milk and milk-derived products. As a co-operative, the company is committed to maximising the financial return for all shareholders, being a profit-oriented entity.

The company is a result of the merger between the two largest dairy processing co-operatives in New Zealand – Kiwi Co-operative Dairies and New Zealand Dairy Group – and the marketing arm of the dairy industry – New Zealand Dairy Board (NZDB). The Group became effective in 2001, when more than 80 per cent of the farmer shareholders voted in support of uniting the operations, which was subsequently approved by the Commerce Commission of New Zealand.

Fonterra is owned by approximately 10,500 dairy farmers. The company handles about 92 per cent of New Zealand's milk production, which represents 14.76 billion of litres or 1.3 billion kg of milk solids (2008/09 season). The co-operative processes the milk collected from farmer shareholders throughout 26 manufacturing sites across the country. The raw milk is transformed into more than 2 million tonnes of dairy products, including a full range of dairy commodities, ingredients and branded consumer goods.

In global terms Fonterra is the world's largest exporter of dairy products, responsible for about a third of international dairy trade, with China being its largest single market by revenue and volume. The New Zealand market consumes only 5 per cent of its production.

The co-operative is a truly global company. It has key offices located in different cities around the world, including Auckland (New Zealand), Beijing (China), Chicago (United States), Moscow (Russia), São Paulo (Brazil), Dubai (United Arab Emirates), Amsterdam (Netherlands), Midrand (South Africa) and Bangkok (Thailand). Likewise, manufacturing sites in Asia, North America, South America, Middle East and Oceania and technical centres in New Zealand, Australia, United States and Germany.

When compared with the world's top dairy companies by revenue, Fonterra is ranked in fifth position, behind Nestlé, Danone, Lactalis and FrieslandCampina (Rabobank, 2010). However, when compared in terms of milk intake the co-operative is in first position, leading with 2.7 per cent of the world's milk production (IFCN, 2009).

The importance of the dairy co-operative for New Zealand's economy is unquestionable. Fonterra exports 95 per cent of its production, which accounts for about one quarter of the export earnings of the country and approximately 7 per cent of its gross domestic product (GDP). The Group is the country's largest business, directly employing over 15,000 people worldwide (60 per cent in New Zealand), with a turnover of NZ\$16 billion (US\$10 billion) in the 2008/09 season.

The co-operative's strategy focuses on four areas to meet the challenges and opportunities in the dairy industry: 1) Ensure it remains one of the lowest cost, sustainable dairy co-operatives in the world; 2) Build trusting partnerships with customers by being a multi-origin supplier, allowing it to build more valuable relationships through supply chain integration and innovation; 3) In high growth markets, where it is not practical to use New Zealand milk, it will leverage cow-to-consumer expertise to take leadership positions using locally produced milk; 4) Make its products the first choice of customers and consumers wherever it does business.

The company operates through five business segments that are defined by product type and geographical area: 1) Fonterra Trade & Operations; 2) Global Ingredients & Foodservices, 3) Australia/New Zealand, 4) Asia/Africa, Middle East; and 5) Latin America. Table 5.1 illustrates the different business segments and reveals the scope of each division.

Table 5.1: Fonterra's business division.

Business Area	Description
Fonterra Trade & Operations	Includes New Zealand Milk Supply, New Zealand Manufacturing, Global Portfolio Optimisation, Global Trade (including the China ingredient milk product business) and Global Supply Chain.
Global Ingredients & Foodservices	Includes Fonterra Ingredients and Specialty operations in North Asia, North America and Europe (including equity accounted investments) and entities focused on global foodservice and paediatric nutrition.
Australia/ New Zealand	Represents Fast Moving Consumer Goods (FMCG) operations in New Zealand (including export to the Pacific Islands) and all FMCG and Ingredient operations in Australia (including Milk Supply and Manufacturing).
Asia/Africa, Middle East	Represents FMCG operations in Asia (excluding North Asia), Africa, the Middle East and China.
Latin America	Represents operations and equity accounted investments in South America.

Source: Fonterra (2010d).

Fonterra Trade & Operations (FTO) encompasses New Zealand milk supply and manufacturing, global trade and supply chain activities. It is responsible for the milk from the farm gate through to Fonterra global trade customers. This includes milk supply, shareholder relations, milk collection, offshore milk sourcing and processing, supply chain, sustainability and government relations. For the most part, FTO produces and sells dairy ingredients. A key focus for FTO is an ongoing drive to reduce production costs through improvements in manufacturing and supply chain efficiency.

Global Ingredients & Foodservices (GIF) on the other hand, provides high-value dairy solutions for customers globally, with particular concentration in the high-value markets of North Asia, North America and Europe. GIF's principal focus is on selling value-added ingredients and specialty ingredients. GIF continues to refine its business to focus on the most promising opportunities to build strong customer partnerships and help gain the highest possible value for New Zealand milk products in world markets.

The Australia and New Zealand business segment (ANZ) represents the operations in New Zealand and Australia, including businesses marketing brands such as Anchor, Tip Top and Mainland. In the 2009 financial year this unit was responsible for 19 per cent of the Group's revenues.

Another important segment is Asia, Africa and Middle East (Asia/AME). This business area is responsible for the operations within these three regions. In December 2009 the co-operative reached an agreement to purchase the remaining 51 per cent stake in Saudi New Zealand Milk products, a joint venture dairy manufacturing facility with SADAFCO in Saudi Arabia. By taking full ownership of the factory, Fonterra secures the current manufacturing capacity requirements for the Middle East and facilitates further expansion and investment.

The last business division, Latam, encompasses the co-operative reach in Latin America. The Group has two main businesses in the region. One is the Chilean dairy processor Soprole, which Fonterra owns. The other is the joint venture with Nestlé, Dairy Partners Americas (DPA). In March 2002 Fonterra established an alliance with Nestlé to set up joint ventures in the dairy business in the Americas. Both companies have equal stakes, with Fonterra providing the expertise in large-scale

milk procurement, processing, technologies and brands and Nestlé providing its brands, product development expertise and distribution infrastructure. Under the arrangement, the joint venture sources fresh milk from dairy farmers in the Americas and its ingredients from New Zealand. DPA operates in Brazil, Argentina, Venezuela, Colombia and Ecuador.

5.2.2 HISTORY AND DEVELOPMENTS

In June 2001, 84 per cent of the farmer shareholders of the two largest dairy co-operatives in New Zealand voted to approve the merger of the co-operatives' operations and together with the New Zealand Dairy Board they created Fonterra Co-operative Group. In October of the same year the company was officially formed, the official name announced and the people to lead the organisation were named.

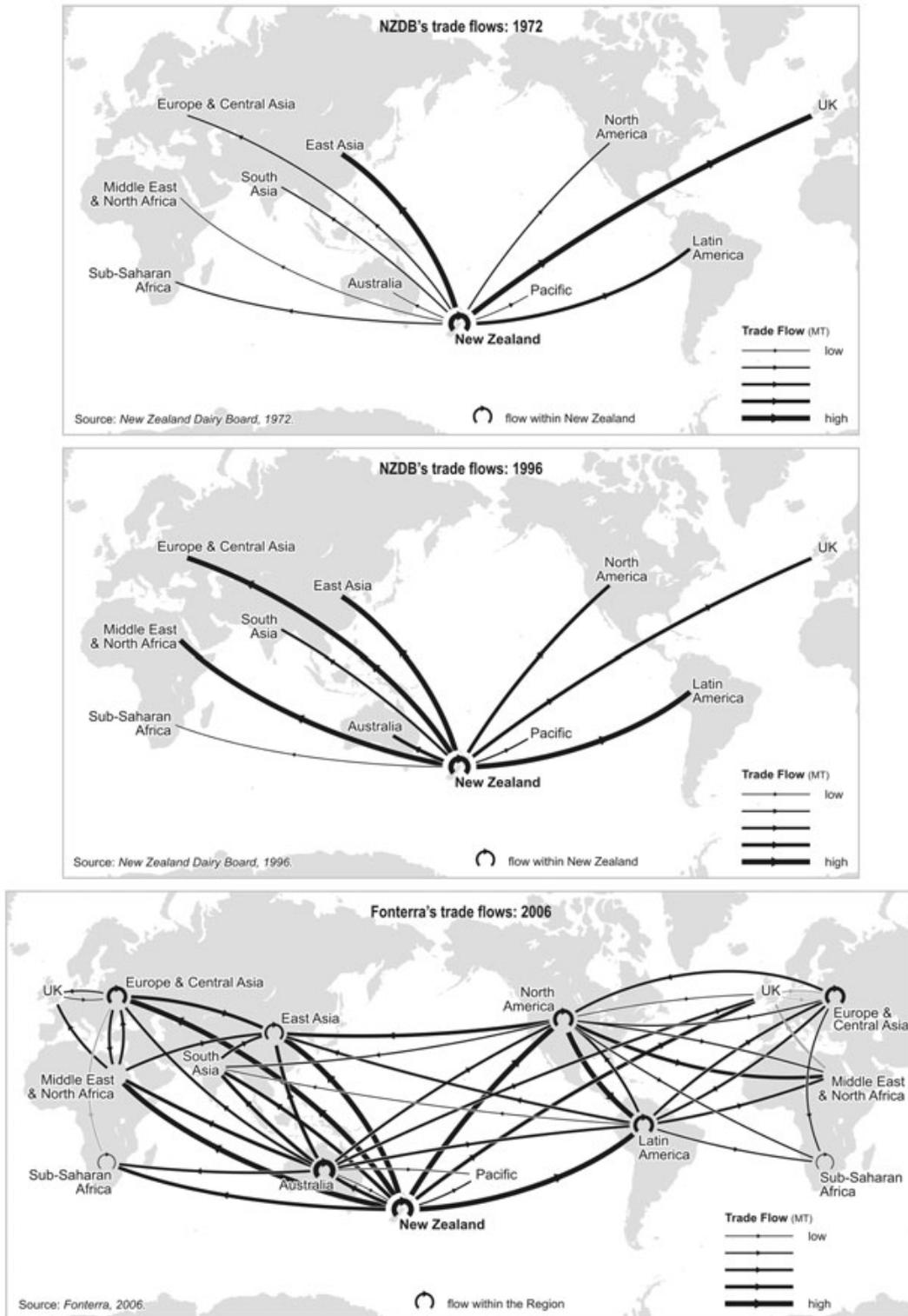
The creation of Fonterra established a distinctive new governance arrangement in New Zealand's dairy industry. The choice of Fonterra as a name affirmed this new beginning; "Font" means springs or fountains and denotes flowing, while "terra" means earth or land. It signalled a commitment to a new business model and associated corporate identity more suited to engaging in the globalising economy, while accommodating the co-operative production and marketing ethos of the New Zealand dairy industry (Gray, Heron, Stringer, & Tamásy, 2007).

The co-operative is a result of the consolidation trend that has been affecting the dairy sector worldwide and perhaps more intensely in New Zealand over the years (Coco, 2003). The number of dairy processing companies in the country was over 400 in the 1930s. Then it started to reduce, decreasing to 168 by the 1960s and 12 in 1996. By the end of 2000 more than 95 per cent of the industry was represented by two major companies: New Zealand Dairy Group and Kiwi Co-operative Dairies (two smaller co-operatives held the remaining 5 per cent). In 2001 the two largest co-operatives merged to create Fonterra (Fonterra, 2010a).

Following the export-led nature of New Zealand's dairy industry, Fonterra, since its inception, has exported most of its production. The company sells to more than 140 countries around the world

(Figure 5.1). In a typical year, the co-operative sells 350 metric tonnes of dairy commodities every hour, closing the doors on a container of export product every five minutes at New Zealand ports.

Figure 5.1: Emergence of Fonterra’s trade flows.



Source: Gray & Heron (2010).

Fonterra has been active in establishing partnerships and joint ventures worldwide, which demonstrates the co-operative's effort to be involved in the dairy sector in different geographical areas around the globe. Table 5.2 lists its main strategic alliances and their scope.

Table 5.2: Fonterra's strategic alliances.

Year	Company involved	Description
2001	Dairy America	Export agreement with an association of seven major US co-operatives. As a result, skim milk powder produced by Dairy America is exported through Fonterra's global network.
2002	Nestlé	Joint venture with Nestlé (50/50) - Dairy Partners Americas. Fonterra provides the expertise in large-scale milk procurement, processing and technologies and Nestlé provides its brands, product development expertise and distribution infrastructure.
2002	Dairy Farmers of America (DFA)	Joint venture with DFA - DairiConcepts. Both companies share technologies, capital, knowledge and innovation. Manufacturing dairy products at ten sites across the USA.
2005	Clover	Joint venture (JV) with South Africa's largest dairy company Clover - Clover Fonterra Ingredients. The JV explores dairy ingredients-related opportunities in sub-Saharan Africa.
2006	FrieslandCampina	Joint venture with the major European dairy company FrieslandCampina - DMV Fonterra Excipients. One of the largest dairy-based excipients to the pharmaceutical market.

Source: Fonterra (2010a).

The co-operative is always searching for methods to rationalise and improve the way business is conducted. A good example is its Internet-based electronic trading platform globalDairy Trade (gDT) launched in July 2008. Through the platform sellers offer to sell commodity dairy products to customers worldwide. The system offers to buyers and sellers the opportunity to improve price transparency, discover forward prices, and better manage price risk (globalDairy Trade, 2010).

Fonterra's gDT is managed by an independent trading manager. The platform has approximately 300 qualified bidders from 56 countries. Among them are between 100 to 140 active bidders participating in each event and around 65 per cent of bidders joining the event win a product. Under the forward-market system, the co-operative agrees to supply for three contract periods. The contract periods offered are:

- I. **Contract period 1:** A 'near-spot' contract which provides for product to be shipped during the third month after the trading event.
- II. **Contract period 2:** A contract where shipment begins in the fourth month following the trading event and continues in equal deliveries for three months.
- III. **Contract period 3:** A longer-term contract where shipment begins six months after the trading event and duration is three months.

Initially it was offered in globalDairy Trade only three categories of whole milk powder. After the first year of gDT's operation, there was an important initiative including whole milk powder from Fonterra's Australian operations in August 2009 and then anhydrous milk fat from New Zealand's operations in November. In March 2010, for the first time, skim milk powder was offered and later buttermilk powder.

The trading events used to occur in the beginning of every month since its inception. However, in September 2010 the frequency of trading events increased to twice a month, in order to add more depth and credibility and even more transparency around pricing trends. The gDT prices have become a benchmarking price for the entire world dairy industry.

The Internet-based system has been a success so far. It has been continuously growing as an efficient and effective sales channel, having sold more than 500,000 metric tonnes of dairy products worth US\$1.5 billion. In the current season – 2010/11 – it is expected that 534,000 metric tonnes of product will be sold through gDT, which represents approximately 25 per cent of Fonterra's New Zealand production. According to Kelvin Wickham, Group Director Supplier and External Relations,

Fonterra has taken a leading role in developing ways to manage the new price volatility in the markets for dairy products (Fonterra, 2010a).

Another important modification in Fonterra's business model since its creation is related to its capital structure. The co-operative has been looking to restructure its capital structure since 2007 when the Board of Directors proposed a new structure. However, the 2007 proposal did not succeed because farmer shareholders were not comfortable with the idea of the public owning shares in the company (voting or non-voting) via a public listing.

Therefore, as the 2007 proposal did not succeed, the Board of Directors worked with the Shareholders' Council to develop a new capital structure which was revealed in 2009. This new proposal was divided into three steps. All three steps were endorsed by farmer shareholders with about 90 per cent of votes in favour of the changes.

All these transformations in Fonterra's history demonstrate its effort to evolve and stay ahead of competitors. According to Goldberg and Porraz (2002 — revised and updated May 2003) Fonterra can be considered one of the most successful co-operatives in the world.

5.2.3 OWNERSHIP STRUCTURE

Fonterra has a pure co-operative ownership structure, where the totality of the company's equity is the property of its farmer shareholders. Donoso (2003) suggests that with the formation of the Group a totally new capital structure, innovative by world standards, was implemented, with different equity and debt instruments, as well as new economic indicators.

However, although the capital structure was innovative and well designed, it was affecting the Group in two ways. First, it was exposing the company to an unsustainable redemption risk, which is the co-operative's obligation to buy back shares from farmers at any time that there is reduction in production or they want to stop supplying milk. Recently droughts that affected New Zealand, especially in the 2007/08 season, culminated in a considerable amount of capital flowing out of the Group. This capital

running in and out of the co-operative used to make it difficult to establish long-term strategic planning and required a considerable amount of capital to be left aside due to the risk of a decrease in milk production which would imply capital being used to buy back shares from farmers.

The second constraint in the capital structure was that it was not allowing full delivery of Fonterra's strategy due to insufficient capital for investment. The Management Team had detailed strategic projects that would increase returns for the company and farmer shareholders however there was limited capital for investment. This was a consequence of the redemption risk which required a significant amount of capital to not be used for financing new projects and also the co-operative necessity for more capital than its current capital base.

Based on Fonterra's needs and farmer shareholders opinions, the Board of Directors in conjunction with the Shareholders' Council proposed in 2009 some changes in the capital structure model. These changes were divided into three steps. All three steps were approved by farmer shareholders with about 90 per cent of votes in favour of the changes. The first two steps were approved in November 2009 and the third step in June 2010.

Step one, 'strengthening the share structure', gave farmers greater flexibility in the number of shares they could own: instead of holding 100 per cent backed by milk supply they could own up to 120 per cent of their current or expected production. As a financial incentive for farmers to hold a buffer of "dry shares"⁷ in excess of production, Fonterra pays a competitive milk price and distributes profits as a dividend based on shares held.

Step two, 'restricted share value', involved changing the way Fonterra shares are valued to recognise the market is restricted to farmer shareholders only. A transitional share price was put in place until the valuation on a restricted market basis catches up.

⁷ Fonterra shareholders are required to hold one share for each kilogram of milk solids they supply to the co-operative in a season. Dry shares are shares that are not backed up by milk supply.

These first two steps were aimed at protecting the co-operative in the short term and were put in place in the wake of the global financial crisis. Additional capital raised from dry shares issued helped to diminish the company's debt gearing. Also, they collaborated to reduce the redemption risk as farmer shareholders with excess shares had a financial incentive to hold on to those shares.

The last step, 'trading among farmers' ceased the obligation of Fonterra to redeem shares. Instead, farmers will trade shares among themselves on a Fonterra Shareholders Market – not expected to begin until late in 2011. This provides the co-operative with a permanent share capital base, giving certainty about the level of capital, regardless of any changes in milk production in any season. Another change approved is that individual farmers who wish to invest in the Group can hold up to two times their production in shares (i.e. 200 per cent versus the 120 per cent approved in step one).

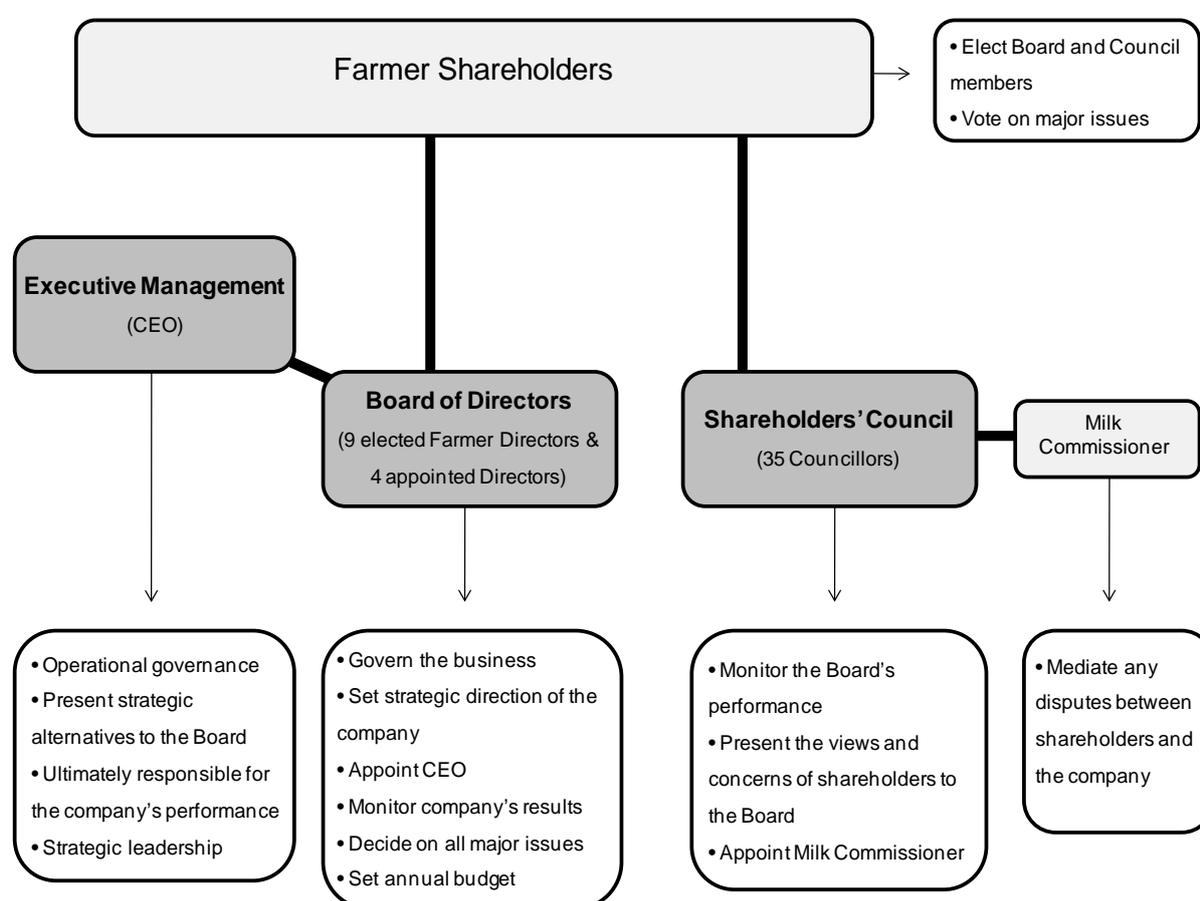
The third step of this new capital structure model will also set up a fund called 'The Fonterra Shareholders Fund' in order to help farmer shareholders to retain shares that they would otherwise have to sell, or purchase shares if needed. The fund will pay farmers for the right to receive dividends and the gain or loss from any change in the value of the shares. The Fonterra Shareholders Fund will raise money it needs to pay farmer shareholders by selling investments units. It will target "friendly" investors such as sharemilkers, retired farmers and offshore suppliers. Institutions and the public will also be able to hold units in the fund. As unit holders in the fund these people would not have shares in Fonterra and, therefore, will not have voting rights. This ensures that Fonterra remains 100 per cent farmer controlled and owned.

Despite the changes in Fonterra's capital structure, there was no modification in the voting rights. Any major change in the co-operative is first put to a vote by farmer shareholders. Farmers are asked to vote on issues such as the recent capital re-structuring, election of new Directors and Councillors, and approval of the Shareholders' Council programme and budget. Each farmer shareholder has one vote for each 1,000 shares he holds; therefore the voting power is proportional to the number of shares held. However, shares that are not backed up by milk supply, known as dry shares, do not have voting rights.

5.2.4 GOVERNANCE STRUCTURE

Fonterra's governance structure is formed by three main bodies: Board of Directors; Shareholders' Council; and Executive Management (Figure 5.2). The company is committed to a system of corporate governance that meets the unique requirements of Fonterra's shareholders and best practice appropriate to a co-operative and, as New Zealand's largest company, also takes into account recommendations by the New Zealand Securities Commission and the New Zealand Exchange (NZX).

Figure 5.2: Fonterra's governance structure.



Source: Author's draft.

5.2.4.1 BOARD OF DIRECTORS

The composition of the Board is a significant element in the governance of the co-operative. The Board is comprised of up to 13 directors. Under the Fonterra Constitution, nine of the directors are elected from the shareholder base (Elected Directors), and four are appointed by the Board and approved by shareholders at the annual meeting (Appointed Directors). There are no executive directors.

Appointed directors have a significant role to play in providing a balance of independence, skills and experience to the Board, complementing the deep understanding of the dairy industry provided by the elected directors. Consequently, appointments are only made after a process involving an extensive search based on detailed criteria. Appointed directors are designated for a term specified by the Board, subject to shareholder consent. Elected directors are appointed for a three-year period, with a third of them having to retire each year with the possibility of seeking re-election.

The Fonterra Constitution specifies the composition of the Board and does not distinguish between “independent” and “non-independent” directors. The appointed directors are independent and free of any supplier relationship with the company. However, the co-operative nature of the company means that elected directors, who must be shareholders, will have a supplier relationship with the Group.

The Board's role is to govern the company on behalf of and for benefit of its shareholders collectively. Having regards to its role, the Board directs and supervises the management and affairs of the co-operative. In this respect, its key activities in discharging its responsibility are:

- I. Determination of payout⁸.
- II. Setting of the fair value share price after the determination of the fair value range by the Valuer.
- III. Review and approval of the budget and corporate plan.

⁸The payout represents the payment for milk supplied combined with the return on the investment in the co-operative – dividends. See further information on Milk Payment Mechanism Section 5.2.5.2.

- IV. Appoint and review the performance of the CEO.
- V. Engagement in the strategic planning process and in the setting of the strategy for the company and the major business units.
- VI. Approval of significant acquisitions and disposal outside management, which it regularly reviews.
- VII. Overseeing a reporting and review process to monitor performance of management.

The Board meets formally at least eight times each year to conduct business. The business at those meetings includes consideration of the operations of the Group, long-term plans, annual plans and budgets, major strategic proposals, and governance matters. The Board also holds a number of workshops to consider matters of significance such as Fonterra strategy and the capital structure. In addition, directors undertake market visits to significant global markets to enhance their understanding of the business of the company and its strategies. These market visits include briefings from management and meetings with joint venture partners, major customers and local political leaders.

Fonterra's Board uses committees or working groups to facilitate more effective and efficient decision-making. Committees and working groups have written terms of reference, and report on their activities to the Board. Committees are made up of directors only, although other people may be present as observers, whereas working groups may have employees, shareholders, or others as members in addition to directors.

The Board has five core permanent committees: the Audit, Finance and Risk Committee ("AFRC"), the Appointments, Remuneration and Development Committee ("ARD Committee"), the Shareholder Relations Committee ("SRC"), the Fair Value Share and Milk Price Review Committee ("FVS Committee") and the External Relations Committee ("ERC"). The AFRC fulfils the responsibilities of the Audit Committee as defined by the NZX Rules, and the ARD Committee fulfils the responsibilities of the Nomination Committee (as far as appropriate) as defined in the NZX Code of Practice (Fonterra, 2010b).

5.2.4.2 SHAREHOLDERS' COUNCIL

The Fonterra Shareholders' Council is a national body of farmer shareholders elected to represent the interests of the shareholders as Fonterra suppliers, owners and investors. There are 35 councillors representing farmers throughout New Zealand – one councillor per ward.

Similar to the Group's directors, councillors are elected for a term of three years, with one third retiring by rotation each year; councillors in turn elect the chairman of the Council – a yearly appointment. Each councillor is elected by shareholders within the ward of farmers they represent. The wards are created based on three main factors: total number of shareholders within the ward; amount of milk solids produced; and the community's interests. In general each councillor is responsible for about 300 to 400 farmer shareholders, depending on the farm density in the area.

The Fonterra Shareholders' Council's (FSC) function is to monitor the performance of the Board of Directors and the direction of the co-operative on behalf of its farmer shareholders. The Council's key responsibilities can be divided into five main areas:

- I. **Performance monitoring:** Each season the FSC receives and reviews the Board's Statement of Intentions (SOI) for the performance and operations of Fonterra. It tracks performance against budgeted SOI targets for key performance measures. The FSC also scrutinises the co-operative's strategy, business plans and future direction.
- II. **Representing farmers:** The FSC represents farmer shareholders' interests on current issues and co-operative decision-making. The Council consults regularly with farmers to canvas views. It also meets regularly with the Board to make sure shareholders' voices are heard and considered.
- III. **Co-operative learning and developments:** The FSC provides learning and development opportunities for Fonterra farmers that help increase understanding about the Group and its operations. It also administers training programmes for prospective directors and councillors.

- IV. **Independent appointments:** The FSC appoints an independent Valuer to value the co-operative's Fair Value Range and the Restricted Market Value Range of shares. It also appoints an independent Milk Commissioner⁹ to consider and facilitate resolution of shareholder complaints with the co-operative.
- V. **Elections:** The FSC determines the election process and sets the rules for the Fonterra Director and Directors' Remuneration Committee elections.

Basically the FSC's activities are supported by its strategic priorities: 1) to protect and improve farmer interests through effective performance monitoring; 2) to lead effective and transparent representation; 3) to lead the development of a knowledgeable and participative farmer base; 4) to positively influence the co-operative through informed, quality decision-making; and 5) to build strong and effective stakeholder relations.

The Council, like the Board of Directors, is internally organised in committees. There are currently four committees in place: Co-operative Development Committee, Governance and Ethics Committee, Performance Committee, and Representation Committee. All these committees have a chairman and have written terms of reference to provide for matters such as purpose and objectives, duties and reporting.

The full Council meets at least six times a year to conduct business, debate and determine policy and receive updates on relevant co-operative matters from members of the Board and Management. It also, with the support of 75 per cent of the councillors, has the power to call a special meeting of shareholders if it has serious concerns with Fonterra's compliance with its co-operative principles or its performance; however that constitutes an extreme measure. The FSC engages with other key stakeholders on matters affecting farmers, always searching for the best alternative for the supplier-shareholders.

⁹ The Milk Commissioner is appointed by the Shareholders' Council, in consultation with the Minister of Agriculture, to consider any disputes between suppliers and Fonterra that cannot be resolved within the co-operative's internal complaints procedure (Fonterra, 2010c).

5.2.4.3 EXECUTIVE MANAGEMENT

The Executive Management represents the team of individuals who are responsible for implementing the strategies of the co-operative in accordance with the Board's direction. It runs the day-to-day business, being also accountable for providing the Board of Directors with strategic investment options, aiming to increase returns for the Group and farmer shareholders.

The Executive Management Team is external to the co-operative, not requiring its members to have a supplier relationship with the company. The executives are professionals recruited in the market in the same way as in any other Investor Oriented Firm (IOF).

Unlike IOF, whose relationship with shareholders is based purely on capital, Fonterra has complex and multi-dimensional relationships with its farmers. They are the shareholders and also the suppliers and the beneficiaries of services and support (Ferrier, 2004). Therefore, in addition to the common management activities in corporate companies, Fonterra senior executives have also to endeavour to communicate effectively with farmer shareholders when necessary, otherwise farmers might not endorse their proposals when an approval is required.

The Fonterra leadership team is led by a Chief Executive Officer (CEO). Gray and Heron (2010) point out that the multicultural composition of the Group's senior executives is a good indicator of Fonterra's global mindset. Among them there are people from Canada (CEO), New Zealand, Australia, the United States, and the United Kingdom, which reinforces the co-operatives drive to be a company with a global reach.

As of September 2010, Fonterra's key senior positions were:

- I. Chief Executive Officer
- II. Chief Financial Officer
- III. Group Director, Human Resources

IV. Group Director, Supplier and External Relations

V. Managing Director, Fonterra Australia/ New Zealand

VI. Managing Director, Global Ingredients and Foodservices

VII. Managing Director, Trade and Operations

VIII. Managing Director, Asia/ Africa, Middle East

Fonterra's three main governing bodies, namely Board of Directors, Shareholders' Council and Executive Management, work together aiming to improve the organisation's performance and returns, whilst providing to farmer shareholders a competitive milk price and a good return on their investment.

5.2.5 SUPPLY CHAIN MANAGEMENT PRACTICES

Fonterra has a highly coordinated and integrated supply chain. This study focused mainly on the interface between the co-operative and its farmer shareholders, therefore three main areas were considered crucial: 1) Co-operative and farmer interaction; 2) Milk payment mechanism; and 3) Supplier selection and assessment.

5.2.5.1 CO-OPERATIVE AND FARMERS INTERACTION

A good relationship between the company and its farmer shareholders is essential to any co-operative and this is definitely the case with Fonterra. By providing premium-quality services and aiming to develop a feeling of ownership, making farmer shareholders feel like owners and members of the organisation rather than simple suppliers, Fonterra contributes significantly to strengthening the co-operative spirit among the suppliers.

It is vital to Fonterra's business that the interface between the company and its milk suppliers is efficient and effectively integrated and managed, since this link is responsible for the main input of the company – milk. In addition, it handles the milk in its most perishable form, as raw milk. Therefore, it

is considered crucial that the relationship between the company and its suppliers is constructive and the flows of material and information are well designed and run efficiently.

The co-operative has a very comprehensive network of channels to interact with farmers, from face-to-face, printed and electronic communication mechanisms, to offering training and extension services and also having in place a farming input supply programme.

Communication

Effective communication is a key aspect for a co-operative of the size of Fonterra. It is extremely important for the success of the company to align everyone in the business to pursue its strategy including: Board of Directors, Shareholders' Council, Executive Management, its 15,600 staff throughout the world and its 10,537 farmer shareholders. Farmers, as previously stated, are suppliers and shareholders; thus they are considered a critical element in the process.

Performance is the most important aspect by which the company is measured by its farmer shareholders, but it is not the only one. Fonterra is constantly communicating with farmers, informing them what the company is doing and the reasons it is doing it — always, however, within commercially sensitive boundaries.

Fonterra has a wide range of communication channels in place to interact with farmers. They can be divided into four different methods: 1) face-to-face; 2) printed; 3) electronic; and 4) others. Face-to-face interventions represent the channels which the farmer has a direct contact with someone speaking as a representative of the co-operative. The main face-to-face methods are listed and briefly explained below:

- I. **Annual general meeting:** The Annual General Meeting (AGM), usually held in November, represents the main opportunity for shareholders to receive reports on financial and operational annual results and topical issues directly from their leaders (Chairman and CEO). At the AGM farmer shareholders also have the chance of challenging their governors about the direction of

the company and vote on major issues. Due to the co-operative's size and the geographical dispersion of its more than 10,500 farmers, the AGM is also video-linked in different venues, with the Chairman and CEO present at the main venue and directors spread among the others.

- II. **Governors/farmers meetings (Directors roadshows):** Directors have meetings with shareholders on a regional basis. Presentations are normally spread between two directors, with usually no more than 100-200 farmers attending at each meeting. Directors meetings are mainly aimed at directors communicating the direction and performance of the company to its shareholders, but also the directors getting feedback from them on key issues. Directors meetings also represent the main opportunity for shareholders to somehow evaluate their elected directors for future re-election purposes. Senior management, management staff and area managers also participate in the meetings.
- III. **Farmer shareholders meetings:** Meetings are held within the different wards focusing on different subjects. These meetings could involve directors and senior executives, but they could also involve other key individuals at Fonterra, to discuss a specific issue, or even people from outside the company. These meetings are usually held twice a year and the logic behind them is to generate discussion with farmer shareholders of current issues and to take farmer's views back to the Board of Directors through the councillors.
- IV. **Farmer community network:** This community network is formed by about 700 farmer shareholders who volunteered to be responsible for disseminating information about the co-operative to farmers and carry farmers' views and opinions back to the company, thereby working as a two-way communication channel. Each farmer networker is responsible for a group of 20 shareholders and they have regular contact with the councillor of his or her ward. In order to motivate the farmer networkers, Fonterra provides them more detailed information about the company and organises special meetings and an annual conference where they have the opportunity to have direct contact with directors, senior executives, councillors and international speakers. In the 2010 conference, for the first time, the company invited all networkers from around the country to one national conference that lasted for two days.

- V. **Farm visits:** Under Fonterra's Milk Supply division there is a team of Area Managers (approximately 40), who are responsible for, among other duties, visiting farmer shareholders on their farms in order to communicate and keep them linked to the co-operative. In addition, there are two Milk Specialist Teams – Food Safety Team and Sustainable Dairying – that provide support on farm issues when necessary.

In terms of the printed communication channels, there are four main methods. All of them are designed to give farmer shareholders a better understanding about the business, revealing financial figures and disclosing how the company's operations are performing.

- I. **Annual report:** The Annual Report is a document sent to all shareholders summarising the company's key figures for the year, information about the company's domestic and international operations and detailed financial information about the Fonterra Group. An electronic version of the report is made available on the company's website.
- II. **Shareholders' Council report:** The Shareholders' Council Annual Report is an independent document (sent only to farmer shareholders) in which the Council gives detailed information regarding the Council's activities over the last year and a detailed analysis of the co-operative's operational and financial performance, fulfilling its role of performance monitoring. The report also includes the Milk Commissioner Report, describing his activities in the year.
- III. **Farmlink magazine:** From February to December every farmer shareholder receives a copy of Farmlink, the co-operative's monthly supplier magazine. Each issue includes columns from the Fonterra Board Chairman, CEO, and Chairman of the Shareholders' Council. Each issue also includes updates about the co-operative overseas as well as what it is doing in New Zealand. Farmlink contains a lot of useful on-farm information on topics like shares, payments and milk quality.
- IV. **Letters to farmers:** Besides the structured printed mechanisms, such as the Annual Report, the Council Report and Farmlink, letters from the company, the Board of Directors and from the Shareholders' Council are sent to shareholders covering topical issues during the year when the necessity arises.

Another important communication mechanism is through the Internet. This channel has been gaining significant attention in recent years as a method to reduce costs. The company has recently launched a campaign to promote the use of its web site during the beginning and end of the season for farmers advising the starting and stopping of milk collection. During these periods the company has usually to hire temporary staff to work on the call centre. The number of phone calls exceeds 1,000 inbound calls per day.

- I. **Fencepost website:** Fencepost is where Fonterra farmers manage their dairy business online. It is considered a very important channel for operational interaction between the co-operative and shareholders. Fencepost offers up-to-the-minute milk production data and quality information, as well as reporting production data against previous seasons and other measures. In addition, farmers can check their statements, generate forecast month-by-month cash flows personalised to their farm, read the latest company news and advertise jobs free of charge.

- II. **Fonterra's website:** The Fonterra website is a very comprehensive website offering information about different aspects of the co-operative including key facts, strategies, structure, history and partnerships. It also provides information regarding the Board of Directors, Shareholders` Council and Management Team, financial and statutory information, industry news, and constant updates on the co-operative's activities.

- III. **Emails to farmers:** In addition to Fencepost and Fonterra's website the company also sends emails to farmer shareholders. The Chairman of the Board usually sends an email to all shareholders on a weekly basis highlighting key important activities taking place around the co-operative's business.

In addition to the face-to-face channels, printed channels and electronic channels, there are also the contact centres and a Sky TV broadcast. Their main features and purpose are briefly explained below:

- I. **Contact Centres:** Fonterra has five service centres prepared to deal with farmers' queries, functioning through an 0800 line. The Supplier Services Team are made up of local people, with local knowledge, generally with some dairying background. They provide information regarding milk quality, milk collection, vats, shares and monthly payments.

- II. **Sky TV broadcast:** The co-operative broadcasts nationally in a Sky TV channel specific discussions about major issues which are of interest to shareholders. The recent capital structure changes had important discussions broadcast. Another interesting programme that is broadcast is called the Fonterra Documentary Series and aims to enhance farmers' broad understanding of the business.

Although these communication channels seek to cover Fonterra's main methods of communication with farmer shareholders, there are also other mechanisms such as field days, casual meetings of directors and councillors with small groups of farmers, and appearances of Fonterra's representatives in industry events, public speeches and other occasions. All of these collaborate to build the co-operative's culture and develop a feeling of ownership among farmer shareholders.

Training and Extension services

Training and extension services are two important characteristics of Fonterra's business model. The co-operative is committed to offering education to farmers on different fronts such as technical farming issues and topics regarding the Group's business – corporate training. Likewise, it provides extension services aiming to ensure farmers' compliance with national and international regulations and to improve farm productivity.

As regards corporate training, the co-operative offers programmes that are directed to farmer shareholders with different levels of understanding about the organisation. These programmes collaborate to elevate their knowledge of the co-operative and work as a catalyst for those who might want to move into directorship and governance representation roles within the co-operative. The first stage, known as "Understanding Your Co-operative Programme", is a two-day course in which farmers have the opportunity to get a detailed understanding of Fonterra and the international dairy

industry. During the programme participants hear from and are able to interact with members of the Management Team, Board of Directors and Shareholders' Council. This programme runs four times through the year, having 50 farmers in each session – generally fully subscribed.

Other programmes at more advanced levels take shareholders to Fonterra's operations overseas in countries such as Australia, the United States and Brazil. This provides farmer participants with an opportunity to experience the operations and their leaders first-hand, collaborating to create a much deeper understanding of how the business is performing and where it is headed. Farmers are then encouraged to share their experience and what they learned with other farmers in their wards, disseminating the knowledge.

On the subject of technical training, the co-operative, through its milk quality advisers and supplier services team, provides to farmers on a daily basis or in field days and discussion groups important support regarding measures to be taken to improve milk quality and milk production efficiency.

Turning now to extension services, Fonterra is committed to helping farmers with all their dairy farming needs so that they can get the most out of their business and from the co-operative. In this respect, the co-operative has four main agencies which provide assistance to farmers. These are listed and explained below:

- I. **Area managers:** Area managers have a good understanding of industry and economic issues affecting the primary sector and dairying. A key part of their role is keeping farmers up-to-date with what is happening with Fonterra's strategy, the global dairy industry, and other company issues.
- II. **Supplier services team:** The supplier services team works through an 0800 line providing information on issues such as milk quality, milk collection, vats, shares and monthly payments. They are located in five different regions around the country, receiving approximately 150,000 inbound calls every year from farmers.

- III. **Food safety team:** The food safety team plays an important part in ensuring farmers deliver safe, high-quality milk to the manufacturing sites. The milk quality advisers, who are part of this team, are available to provide technical assistance for farm dairy compliance, milk quality issues, animal welfare and other food-safety-related queries.
- IV. **Sustainable dairying team:** The sustainable dairying team is available to provide one-on-one support to help farmers achieve the best environmentally and economically sustainable outcomes for their farms. Team members are specialists in effluent management and compliance.

These four actors play a crucial role in giving farmers information and resources to better manage their business. In addition to Fonterra's extension services, there is also the industry organisation called DairyNZ. DairyNZ represents New Zealand's dairy farmers and provides them support on a number of fronts. Funded by a levy on milk solids and through government investment, its purpose is to secure and enhance the profitability, sustainability and competitiveness of dairy farming in the country. An important role of DairyNZ is technology transfer. One of the several channels used is the Discussion Group Method where a group of farmers, a DairyNZ consulting officer and usually a Fonterra representative, get together to discuss issues related to dairy farming and how to enhance performance of the milk production systems that are currently in use on their farms.

Farming input supply programme

One of the advantages of farmers in organising in co-operatives is to achieve economies of scale by pooling resources. Consequently, farming input supply programmes, in other words, strategies which are designed to provide farmers with a secure supply base of inputs at a competitive price is an efficient and effective method to collaborate to the advantage of the farmers' business.

Fonterra, in alliance with Landmark, an Australian company, are partners in a joint venture called RD1. RD1 is New Zealand's largest retailer of agricultural services to dairy farmers. With a combined procurement base of over NZ\$2 billion, its objective is to use its buying power to provide competitive farm inputs for Fonterra suppliers.

The company operates 55 stores across the country, with a technical sales force who work on the farm with farmers helping to reduce their costs and maximise their productivity. The company is committed to offering the best possible price, claiming: “we won’t be beaten on price” (RD1, 2010). The rural retailer also provides seasonal financing to farmers, which supports them in periods of tight cash flow.

RD1, operating as the rural supplies arm of Fonterra, has three main purposes: 1) provide competitive pricing and savings on core farming inputs to Fonterra suppliers, to help ensure dairying is profitable and sustainable; 2) direct Fonterra’s portion of profit from RD1 back to suppliers’ returns; and 3) be the face of Fonterra in local communities and negotiate deals on behalf of Fonterra suppliers for insurance, power, phone, fuel and other key business inputs. As Fonterra suppliers, farmers automatically are set up with an RD1 trading account, giving them access not only to farming products but also RD1 livestock, nutrition and partnership offers.

5.2.5.2 MILK PAYMENT MECHANISM

The milk price is the most important number in the co-operative. Fonterra milk payout represents the return farmers receive for supplying milk to the co-operative; it has two main components: the milk price and the dividend.

After each season the Board of Directors determines the payment to be made for milk supplied by shareholders during that season. In determining that payment, the Board has regard to the income from all activities of the Group, less the costs of the company. The costs of the company include all manufacturing costs, principal repayments, interest and financing costs, and additional costs directly attributable to other activities of the company.

At the beginning of each season Fonterra calculates the estimated milk price which is based on a mathematical model that takes into consideration the international price of a basket of dairy commodity products, including whole milk powder, skim milk powder, butter, buttermilk and anhydrous milk fat, also the forecast foreign exchange rate, less the costs of running the most efficient

manufacturing plant. The estimated milk price may vary during the season; however, the final price, the one which the farmer will be paid, is established at the end of the season.

In addition to the milk price there is also the farmers' return on their investment in the dairy co-operative, known as dividends. Farmer shareholders must hold the co-operative's shares and for each share they receive a return on their investment. The dividends include cash generated from Fonterra's investing activities in high-value consumer markets and in value-added dairy ingredients, less the retentions required to fund future investing activities. In general, farmers' income is about 95 per cent from milk price and 5 per cent from dividends.

The Fonterra milk payment mechanism represents the value that the farmer shareholder receives per kilogram of milk solids¹⁰ supplied. The co-operative takes samples for compositional testing each time it collects milk from farmers. The amounts of milk fat and protein in each sample are used to work out the payment according to the formula: $a + b \pm c + d$ where:

a = cents per kilogram of the milk fat component contained in the milk supplied

b = cents per kilogram of the protein component contained in the milk supplied

c = volume adjustment in cents per litre of milk supplied

d = dividends on each share

Because of the seasonal nature of New Zealand dairy farming, Fonterra's processing plants are fully utilised for only a limited time each year. The peak dictates the total amount of processing capacity needed. Therefore, Fonterra applies a capacity adjustment to the milk payment. Each farmer is entitled to supply a certain volume of milk during the peak period. If the actual peak supply exceeds their entitlement, an amount is deducted from his milk payment. If their supply is less than their entitlement, an amount is credited. Because the co-operative has a mandate to process all the milk that its shareholders provide, as the peak grows more capacity is required. However, an increase in milk supply outside the peak does not contribute to any need for additional capacity. For that reason,

¹⁰ New Zealand dairy farmers use the term milk solids to describe the amount of milk fat and protein contained in the milk. One kilogram of milk solids is equivalent to approximately 12 kilograms of milk.

by applying the volume adjustment, Fonterra gets a balance in the system; farmers with high peak profile contribute more capital to fund the required additional capacity by paying the volume adjustment.

Milk quality is another important variable in the milk price. Fonterra conducts a significant number of tests to ensure that the quality of the milk complies with its standards and meets international and national regulations. In each test the company determines the results which are acceptable and how close they are to target. If the milk supplied by the farmer is acceptable but does not achieve the target, he receives a demerit point. With each demerit point the farmer receives a penalty for poor quality which means a 5 per cent deduction¹¹ from payments made for milk collected on that day. By having a milk quality payment programme in place Fonterra makes it clear to its farmers that quality is a critical issue and poor quality, which would affect its operations causing financial losses, is penalised accordingly.

5.2.5.3 SUPPLIER SELECTION AND ASSESSMENT

Farmer shareholders have a vital role in the co-operative not only because they are the shareholders – the owners of the business – but also because they are the providers of the most valuable input of the company, milk. In this respect, having milk suppliers who meet the co-operative's principles and also the national and international regulations is a critical aspect of the business.

In order for a dairy farmer to commence supplying milk to Fonterra it is necessary to comply with a series of regulations set by the New Zealand Food Safety Authority (NZFSA) for farm dairies. Similarly, the farmer is required to comply with Fonterra's set of rules in relation to a number of things including milk storage and refrigeration, and tanker access. It is also necessary to purchase co-operative shares to meet the expected milk production for the season.

The Fonterra Suppliers' Handbook offers farmers detailed information regarding the requirements necessary to supply milk and how these requirements can be met. In essence, any dairy farmer who

¹¹ Deduction is made from an amount equal to 90 per cent of the opening milk payout forecast each season.

complies with NZFSA and Fonterra's regulations and who is also willing to purchase co-operative shares can become a milk supplier to Fonterra.

However, being a milk supplier requires constant compliance with the standards. Therefore there is an Annual Farm Dairy Assessment through which the co-operative ensures that the dairy farm is meeting the rules. These assessments are conducted by an approved Farm Dairy Assessor; currently Fonterra has two contract service providers: Quality Consultants of New Zealand (QCONZ) and AsureQuality.

All Fonterra suppliers receive one notified Farm Dairy Assessment per season. The farmer normally receives a notification four days prior to the assessment. The assessment covers a wide-ranging list of items including: 1) sanitation of plant and premises; 2) facilities and structures; 3) regulatory requirements and records; 4) quality management (e.g. Best on Farm Practice (BOFP); and 5) environment and animal welfare.

If the dairy farm is not meeting the requirements, receiving an overall C classification, where two or more hazards have been identified, the co-operative carries out a follow-up assessment within two weeks to check if the issues have been solved. If they have not been solved stricter measures are taken until the harshest measure is applied, which is suspending the collection of the milk. The farm dairy inspection is free of charge for the farmer, however, when there is a problem and revisits are necessary for appraisals and inspections, a fee is charged.

5.2.6 RELATIONSHIP BETWEEN FARMERS AND CO-OPERATIVE

A good relationship between farmer shareholders and the co-operative is a key factor in creating a prosperous business. In order to have a long-term successful relationship three variables are considered critical, namely trust, level of interaction and commitment. For the purpose of this research these three variables will be analysed, taking into consideration the farmers' views and attitudes and their assessment of the relationship.

As regards to trust, which can be defined as the confidence that the co-operative is taking all necessary measures to improve returns for shareholders and the company, all farmers agree, indicating that they can rely on Fonterra. Farmers pointed out that the co-operative is very transparent, volunteering a comprehensive amount of information and being open to giving more when required. In addition, they indicated that the existence of a Shareholders' Council monitoring the company and presenting the farmers' views and concerns make farmers even more comfortable with trusting the company.

If we now turn to the farmers' assessment of the level of interaction between them and the co-operative the result is also very interesting. Unanimously, farmer shareholders are very satisfied with the importance that Fonterra gives to communicating with them. Farmers pointed out that there are many communication channels in place, which ensures that they are aware of what is happening with the co-operative and which provide information about specific issues affecting the dairy industry. Farmers also stated that area managers and the Shareholders' Council play a crucial role in being an efficient point of contact when there is any type of issue to be solved or when any information about the co-operative is needed.

However, due to perhaps different profiles of farmers, a few farmers suggested that the amount of paperwork and material received by post could possibly be reduced. These farmers expressed the belief that some farmers don't have time, or perhaps don't want, to read certain publications therefore it becomes an unnecessary expense. Finding the correct balance between too little and too much information is a challenge; especially when dealing with a large supplier base.

On the subject of commitment, in an implicit wish to continue the relationship, a large majority of farmers stated that they are pleased with the way the co-operative is governed and managed, therefore they will remain in a relationship with the company in the future. Farmers noted that the considerable amount of money they have invested in the co-operative makes them devoted to supply the best quality milk and also to take all necessary measures to ensure Fonterra's business prospers.

5.3 COOPERATIVA CENTRAL DOS PRODUTORES RURAIS DE MINAS GERAIS (CCPR/ITAMBÉ)

5.3.1 COMPANY OVERVIEW

Cooperativa Central dos Produtores Rurais de Minas Gerais — in English: Central Co-operative of Rural Producers of Minas Gerais (CCPR/Itambé) — is the largest dairy co-operative in Brazil. The company is primarily involved in the collection, manufacture and sale of milk and milk-derived products. As a co-operative, the company is committed to maximising the financial return for all associated farmers, being a profit-oriented entity.

Itambé is comprised of a federation of local co-operatives, also known as associated or tier-one co-operatives. In 1944 the co-operative took firm and decisive steps towards success. Usina Central de Leite, a state-owned entity, was founded that year, and later developed into Itambé. In 1948 Itambé was formed as a result of a pioneering privatisation experiment in which the state enterprise was transformed into a central co-operative owned by a group of local dairy co-operatives (Itambé, 2010).

Currently Itambé is owned by 31 tier-one, local co-operatives, representing approximately 8,500 dairy farmers. The company processes about 1.2 billion litres of milk a year through six manufacturing sites located in the states of Minas Gerais and Goiás. Itambé was originally established in Minas Gerais, where its headquarters is located in the capital Belo Horizonte. Minas Gerais is the main milk producer state in Brazil with annual production of 7.7 billion litres (IBGE, 2010). The state's extensive area is a good example of Brazil's vast territory. It is equivalent to France — double New Zealand's size.

Among the major dairy companies in Brazil, Itambé is in fourth place in terms of milk intake¹². The co-operative recently lost second place amid the rapid consolidation process that has been occurring in Brazil's dairy industry in which food corporations that were previously not involved in the dairy sector have acquired dairy companies and important players have merged. However, when compared with

¹² See Table 3.1 on page 54.

other dairy co-operatives — farmer-owned enterprises — Itambé comes in first, with milk intake more than double that of the second-placed co-operative.

In a globalised economy, in order to cope with increasing competition from other dairy companies, especially those which have been involved in mergers and acquisitions in recent years, Itambé is presently negotiating to merge with three important dairy co-operatives to create a major company in Brazil. If the negotiations succeed, this conglomerate would become the largest dairy co-operative in Latin America, with annual milk intake over 2 billion litres and forming one of the top 20 dairy companies in the world (Rabobank, 2010).

Itambé plays a crucial role in Brazil's dairy industry development. The co-operative was a pioneer in implementing bulk milk collection in the 1990s. Until then, cows in Brazil were milked on the farms and the milk carried directly to manufacturing plants or refrigeration sites in common trucks using churns (milk cans). The implementation of a bulk milk collection system represented a significant change in the dairy industry. In addition, Itambé was the groundbreaker in developing and establishing a milk quality payment mechanism under which dairy farmers receive a bonus when their milk achieves certain quality targets, revealing the company's commitment to providing the best quality milk to consumers.

Another important front in which the Group blazed a trail is related to the international market. Brazil has a history of being a significant importer of dairy products. During the 1990s the country used to import approximately US\$500 million worth of dairy products a year (Martins, 2004). However, Itambé's strong drive to increase its market culminated in 2002 in establishing a partnership with a trading company, Sertrading, jointly forming Serlac S.A. Serlac is an international dairy trading company which has a vital role in promoting Brazil's dairy products globally and it contributed significantly to Brazil's achievement in 2004 — for the first time in its history — of a trade surplus in dairy products.

The Itambé Group directly employs over 3,000 people across the country, with an annual turnover of R\$1.843 billion (roughly US\$1 billion) in the 2009 fiscal year. The company operates through three

main business segments to be able to provide to associated farmers the best return for their milk: 1) Dairy; 2) Rural retail store (Armazém Itambé); 3) Animal feed (Rações Itambé). Table 5.3 illustrates these business segments and reveals the scope of each division.

Table 5.3: Itambé's business division.

Business Area	Description
Dairy	Includes the company involvement in the collection, manufacture and sale of milk and milk-derived products, including a full range of dairy commodities and branded consumer goods.
Rural Retail Store (Armazém Itambé)	Represents the company rural retail store business. It is the largest rural retail network in Brazil, comprising 24 stores spread across two Brazilian states.
Animal Feed (Rações Itambé)	Represents the company business in manufacturing animal feed for dairy and also for poultry, pork and the equine industry.

Source: Adapted from Ávila, Martins, & Moreira (2009) and Itambé (2010).

The Group's Dairy Division encompasses milk supply, manufacturing, sales and supply chain activities. It is accountable for the milk from the farm gate to customers and consumers – from 'farm to fork'. This division is the co-operative's core segment, being responsible for the fast-moving consumer goods (FMCG) and dairy commodities production and distribution.

Rural Retail Store (Armazém Itambé) is another significant division of the company. Itambé has 24 agricultural retail stores spread across two Brazilian states, Minas Gerais, comprising 14 stores, and Goiás, holding 10 stores. It is Brazil's largest network of rural stores dedicated exclusively to farm and livestock supplies, providing to associated farmers over 5,000 different products. This business division was established with the objective of providing farm supplies to farmers at a competitive price.

The third business, Animal Feed Division (Rações Itambé) represents the company business in manufacturing an extensive line of concentrated feed for dairy cows and also for poultry, pigs and

horses. In May 1982 Itambé launched its first animal feed manufacturing plant. Currently the company has three plants (one is managed by a third party), providing to associated farmers animal feed supplies of excellent quality at a competitive price. This makes Itambé the largest producer of concentrated feed for dairy cattle in Brazil, with an annual output of about 300,000 metric tonnes.

5.3.2 HISTORY AND DEVELOPMENTS

In April 1944 the state government of Minas Gerais founded a dairy company which later was transformed into CCPR/Itambé. This company, namely Usina Central do Leite, a state-owned entity linked to the Office of the Minas Gerais Agricultural Secretary, was established with the purpose of guaranteeing milk supply to the inhabitants of Belo Horizonte, Minas Gerais's capital.

In 1948 the state government promoted a meeting with dairy farmers of the region with the intention of inspiring them to create a co-operative to take over control of the public company. In November of the same year, representatives from six local co-operatives and five individual dairy farmers agreed to establish a central co-operative, namely the Cooperativa Central dos Produtores de Leite Ltda. (in English: Central Co-operative of Dairy Farmers Ltd).

One year later the company's assets were transferred from the government to farmers in a leasehold agreement. After a few years of operation with this new co-operative structure, the dairy company began to produce a surplus of pasteurised milk, the only product it manufactured, and eventually started to produce milk-derived products such as milk powder, cheese and butter. In 1956 the co-operative changed its name to Cooperativa Central dos Produtores Rurais de Minas Gerais Ltda. – CCPR. At this stage the name Itambé was the company marketing brand.

By 2000, the co-operative's leaders identified the necessity to study new governance arrangements which would allow the company to have greater access to technology and capital. Therefore, as a result of intense discussions among the co-operative's directors, in August 2000, the creation of Itambé S.A. was approved. The company was formed to find a strategic partner who would bring to the business new technologies and capital. The tier-one, local co-operatives – owners of the

company – supported the new structure which allowed Itambé to put on the market a maximum of 49 per cent of its shares.

However, although the company had the option of a strategic merger, it did not find a satisfactory partner, so at the time of writing it still has 100 per cent control in the hands of its associated co-operatives. The recent merger negotiations with three important Brazilian dairy co-operatives might change this structure, if it succeeds.

Itambé's commitment to increase the return for associated farmers and promote the co-operative spirit among the supplier base culminated in the company expanding into other regions of the country, overcoming Minas Gerais's (MG) boundaries to encompass tier-one, local co-operatives from the state of Goiás (GO) and São Paulo (SP). Both states have significant importance in Brazil's dairy scenario; Goiás due to its increased milk production in recent years and also an important domestic market, and São Paulo for having the largest single market in Brazil with a population in just one city of over 10 million inhabitants, which makes it the largest city in the Southern Hemisphere.

The co-operative, as previously stated, can be classified as a pioneer in Brazil's dairy industry. It has implemented innovative mechanisms to better manage its supply chain and is constantly seeking to have a constructive relationship with dairy farmers. The implementation of bulk milk collection in the late 1990s and a milk quality payment mechanism in 2005 were two crucial transformations in Brazil's dairy sector. Furthermore, the company was the first organisation in Brazil to pay a loyalty bonus to dairy farmers who supply milk throughout the year, revealing its aim to secure its supplier base. Another significant front on which the co-operative endeavours to stay ahead of competitors is related to product market mix. The company currently produces about 152 different products, being responsible for leading the way in launching a number of products such as light butter and condensed milk (Itambé, 2010).

With regard to the international market, the company's involvement commenced in the 1970s exporting small quantities of dairy products to Europe and Africa. However, in 2002, with the formation of Serlac, an international dairy trading company, the co-operative changed its marketing

approach to the global market. It started to invest in manufacturing plants which could better address the international market demands for products such as whole milk powder, condensed milk and evaporated milk. By 2003 the company was exporting to 13 countries a total of 8,000 metric tonnes of dairy products. In 2004 its export reach increased to 28 countries selling about 15,000 metric tonnes. The evolution continued in following years, reaching an exporting peak in 2007. At this stage, the co-operative was exporting to 55 countries located in North America, Central America, South America, Africa and Asia, generating approximately US\$130 million of revenue from exports, making Itambé Brazil's major exporter of dairy products.

All these modifications in Itambé's history reveal its endeavour to evolve and stay ahead of competitors. Chaddad (2007a) and Santos (2005) suggest that the co-operative is a good example of a small number of dairy co-operatives that succeeded in Brazil after deregulation of the dairy markets in the early 1990s which culminated in a fierce competition among dairy companies.

5.3.3 OWNERSHIP STRUCTURE

Itambé has a co-operative structure where the totality of the company's equity is the property of its associated co-operatives. As a central co-operative, Itambé has the objective of establishing a direct link between milk production and dairy product consumers.

The Group is owned by a confederation of 31 tier-one, local co-operatives which in turn are owned by approximately 8,500 dairy farmers and also some dry farmers¹³. Each local co-operative has its own capital structure and is financially independent of Itambé. Many of them have business-related activities other than dairy, such as being proprietors of petrol stations and supermarkets. Therefore, individual dairy farmers do not have a direct ownership relationship with Itambé; the local co-operatives, owned by the farmers, are the ones directly connected with the central co-operative.

¹³ Dry farmers are those farmers who are associated with the tier-one, local co-operatives, however they do not produce milk.

Itambé's capital structure is based on shares. Each tier-one co-operative must hold a number of shares proportional to the volume of milk it supplied to the company in the year (Itambé, 2007). Since 2003 the company profits are distributed in the following manner: 1) 30 per cent is distributed directly to associated dairy farmers; 2) 10 per cent is distributed to the local co-operatives – generally the local co-operatives transfer this capital to farmers as well; and 3) 60 per cent is held by the central co-operative to finance future investments and to put into funds which are required by its statutes and the Brazilian co-operative law - 5.764/1971.

As regards the tier-one, local co-operatives, dairy farmers have to purchase a co-operative shareholder quota in order to become an associated farmer and start supplying milk. Each local co-operative has its own policies and methods, however the shareholder quota price is usually symbolic, a small amount to demonstrate the farmer's commitment. The quota normally may be paid in interest-free instalments.

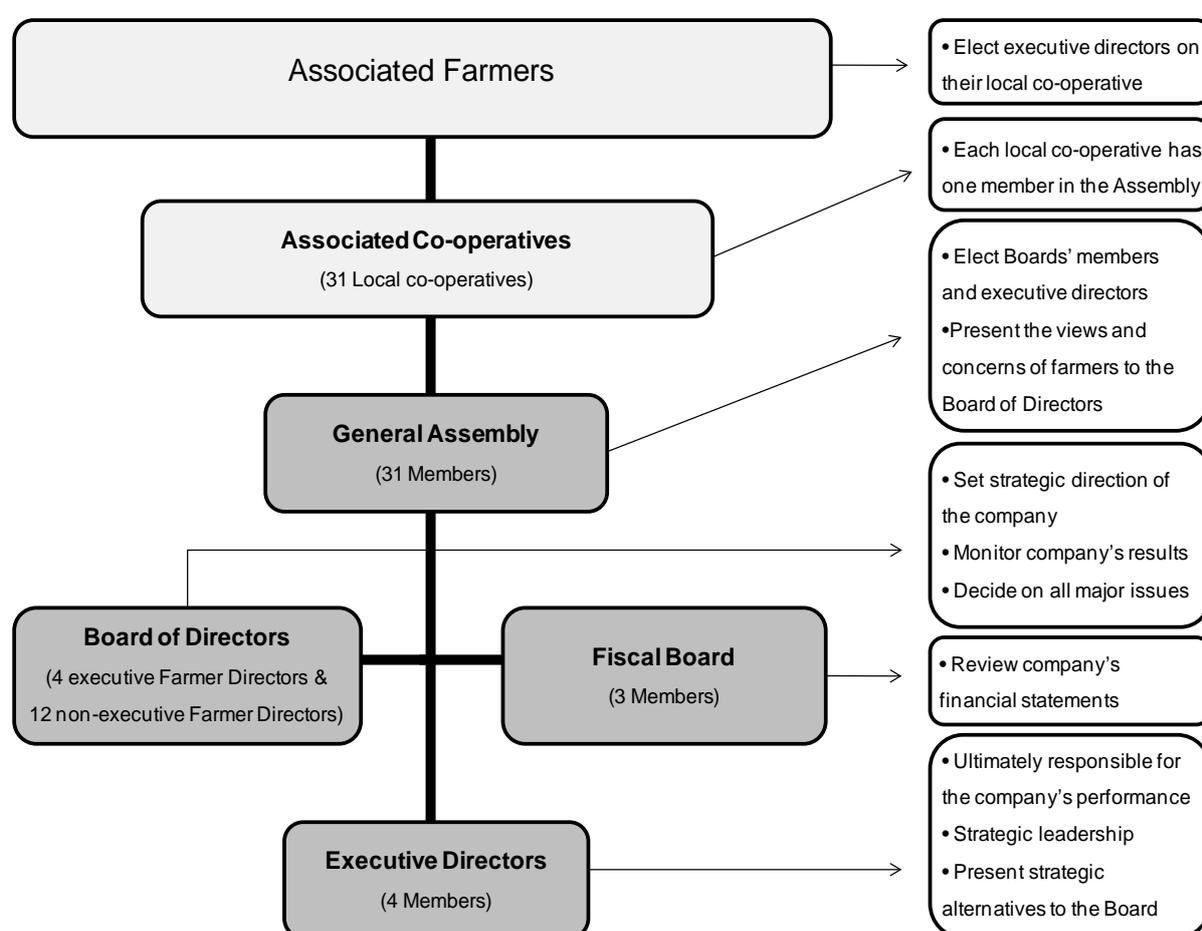
Another characteristic is that the number of shareholder quotas to be purchased by the farmer is not proportional to the volume of milk supplied; each farmer must hold only one quota, independently of the volume of milk supplied. Therefore, farmers do not have a substantial amount of capital invested in the co-operative, as occurs in the New Zealand company.

Turning now to the voting system, it operates in a manner equivalent to the capital structure. Decisions at the central co-operative level, such as choosing the members of the Board of Directors and Executive Directors, are voted on by one representative of each local co-operative, usually the president. Individual farmers do not get involved in decisions at the central co-operative level. On the other hand, topics concerning the tier-one, local co-operatives, such as selecting their directors, are voted on by dairy farmers from each associated co-operative. The voting system is independent from Itambé. Decisions at both levels – central and local – are reached by the system of one man, one vote. There is no distinction based on the volume of milk supplied.

5.3.4 GOVERNANCE STRUCTURE

Itambé's governance structure is formed by four main bodies: (1) Board of Directors; (2) Executive Directors; (3) Fiscal Board; and (4) General Assembly (Figure 5.5). The company is committed to a system of corporate governance that meets the requirements of the Brazilian Co-operatives Law (Lei das Sociedades Cooperativas – 5.764/1971) and best practice appropriate to a co-operative.

Figure 5.3: Itambé's governance structure.



Source: Author's draft.

5.3.4.1 BOARD OF DIRECTORS

The composition of the Board of Directors is an important element in the governance of the co-operative. The Board is comprised of 16 directors. Under the Itambé statutes and the Brazilian Co-operatives Law, it is required that all members are elected from the supplier base. Therefore, there are no outside directors. Amongst the 16 directors are four executive directors.

Directors are elected for a three-year period, and may seek re-election; but a third of them must retire after the term. Directors are elected by representatives of each associated, local co-operative who are members of the General Assembly. The Board must not have more than one representative of each associated co-operative.

The Itambé Constitution specifies the composition of the Board and distinguishes between executive directors and non-executive directors. There are four executive directors, namely President, Administrative Vice-President, Commercial Vice-President and Supply Vice-President. The remaining twelve directors are classified as advisers (Itambé, 2007).

The President and the Vice-Presidents, under the threat of losing their term, must in thirty days maximum not hold a management position in any associated co-operative. The President, as the Chairman of the Board, has the casting vote when necessary.

The Board of Directors' role is to govern the company for the benefit of its associated co-operatives and dairy farmers collectively. Having regard to its role, the Board directs and supervises the management and affairs of the co-operative. In this respect, its key activities in discharging its responsibility are:

- I. To establish the milk price.
- II. To regulate the co-operative's operations.
- III. To review and approve of the budget and corporate plan.

- IV. To engage in the strategic planning process and in the setting of strategy for the company.
- V. To sanction significant acquisitions.

The Board meets formally every month, on a specific day, to conduct business. It can also have special meetings under the convocation of the President, on the request of one fourth of its members or by demand of the Fiscal Board. The business at those meetings includes consideration of the operations of the co-operative, dairy market scenarios, determination of the milk price¹⁴, annual plans and budgets, major strategic proposals and governance matters (Itambé, 2007).

5.3.4.2 EXECUTIVE DIRECTORS

The Executive Directors play a crucial role in managing the business. They represent the four elected farmer directors who are responsible for implementing the strategies of the co-operative in accordance with the Board's requests. They are the company's President, Administrative Vice-President, Commercial Vice-President and Supply Vice-President. The executive directors are members of the Board of Directors, where the President is also the Chairman.

The executive directors run the day-to-day business, being also responsible for taking to the Board strategic plans to increase the competitiveness and performance of the company. The President, in the highest position in the organisation, among other duties, is accountable for representing the company, monitoring and controlling the company's activities and making sure at least four general meetings are held every year, where representatives from all associated co-operatives and members of the Board of Directors are present. These meetings are a good opportunity for the co-operative's leaders to interact among each other, discuss topical issues and keep the tier-one, local co-operatives linked to Itambé.

As regards the vice-president positions, each executive director is responsible for a specific department of the organisation. The Administrative Vice-President has among his duties to control the company's management and finance sectors, being accountable for them. On the other hand, the

¹⁴ In Brazil dairy companies establish the milk price on a monthly basis.

Commercial Vice-President is responsible for running the commercial division of the company, particularly focusing on sales and logistics. Finally, the Supply Vice-President is accountable for managing the interface between the company and its associated co-operatives, in that way being responsible for the rural retail store (Armazém Itambé) and animal feed (Rações Itambé) business divisions.

5.3.4.3 FISCAL BOARD

The Fiscal Board is comprised of three members, all of them having a supplier relationship with the co-operative. The Board's members are elected by representatives of each tier-one, local co-operative during the General Assembly. The term is for one year, and they may seek re-election; however, two members must retire after the term.

The Fiscal Board's principal function is to supervise the acts of the managers and verify compliance with the legal and statutory duties. Other functions are for example, the analysis of the financial statements for the fiscal year and to give an opinion on management's proposals with respect to changes in the capital structure. Likewise, to relate to the Board of Directors its appraisal of the co-operative's financial information.

The Board meets formally once a month to conduct business; however, it may also request special meetings whenever it is classified as necessary. In order to efficiently and effectively monitor all the necessary information regarding its tasks, the Fiscal Board may request to contract a specialised consulting firm to collaborate with its activities, or likewise, to utilise information from the auditing service providers.

5.3.4.4 GENERAL ASSEMBLY

The General Assembly is a vital component of the co-operative's governance structure. It is formed by thirty-one members who are the representatives of all tier-one, associated co-operatives. Each

associated co-operative has one representative in the General Assembly, usually being the local co-operative's president.

The General Assembly is normally called by the central co-operative's President who is the chairman of the meeting. However, it can also be requested by: the Fiscal Board, the Board of Directors or with the support of one-fifth of the associated co-operatives.

At the General Assembly any decision is put to a vote by representatives of each local co-operative. Representatives are asked to vote on issues such as election of Board of Directors and Fiscal Board and major changes in the company such as a merger, acquisition or breakup. Each representative has one vote, irrespective of the volume of milk that its local co-operative supplies to the company. There are two types of assembly; one known as 'Assembléia Geral Ordinária', that takes place in the first quarter of every year where the Board of Directors provides reports regarding the operation and performance of Itambé and also the appraisal of the Fiscal Board and the auditing service provider concerning the company's financial information. At this meeting, it also elects the Fiscal Board and the Board of Directors, when necessary.

The other type of assembly, which is called 'Assembléia Geral Extraordinária', takes place when it is necessary to meet the co-operatives' representatives to discuss issues or vote on specific matters. The president may also call this meeting to better integrate the participants from the General Assembly.

Itambé's four main governing bodies, namely Board of Directors, Executive Directors, Fiscal Board and General Assembly, work together aiming to improve the company's performance and returns, whilst providing to associated co-operatives and dairy farmers a satisfactory result and a competitive milk price.

5.3.5 SUPPLY CHAIN MANAGEMENT PRACTICES

Itambé has a well-coordinated and integrated supply chain. This study focused mainly on the interface between the company, associated co-operatives and dairy farmers; therefore three main areas were considered crucial: 1) Co-operative and farmer interaction; 2) Milk payment mechanism; and 3) Supplier selection and assessment.

5.3.5.1 CO-OPERATIVE AND FARMERS INTERACTION

A good relationship between the company and its farmer suppliers is crucial to any co-operative and this is certainly the case with Itambé. The company has a comprehensive network of channels to interact with its tier-one, local co-operatives and associated farmers.

In Itambé's business it is very important that the interaction between the company, local co-operatives and dairy farmers are efficiently and effectively designed. To better understand the nature of Itambé's interaction mechanisms it is important to analyse the three main channels in place: 1) direct interaction between the company and associated farmers; 2) interaction between the company and farmers' representatives (local co-operatives); and 3) interaction between local co-operatives and associated farmers.

Tier-one, local co-operatives and their representatives play a crucial role in linking the central co-operative to dairy farmers. Since they are in direct contact with farmers on a regular basis their contribution to the process is critical. Nevertheless, Itambé also has a significant network of channels to interact directly with farmers, from face-to-face, printed and electronic mechanisms, to offering training and extension services and giving support in farming supplies.

In recent years the co-operative has significantly increased the flow of information with farmers, launching new channels and restructuring some methods that were in place. The fierce competition among dairy companies requires continuous improvement to secure the supplier base.

Communication

The milk price is the most important aspect by which the company is measured by its associated farmers, but it is not the only one. Itambé is constantly communicating with farmers, informing them what the company is doing and the reasons it is doing it — always, however, within commercially-sensitive boundaries.

Itambé has a significant network of communication channels in place to interact with farmers and their representatives. There are four different methods: 1) face-to-face; 2) printed; 3) electronic; and 4) others. Face-to-face interventions represent the channels where the farmer or his representative has direct contact with someone speaking on behalf of the company. The main face-to-face methods are listed and briefly explained below:

- I. **General Assembly (Assembléia Geral Ordinária):** The General Assembly, usually held in March, represents the main opportunity for farmers' representatives to receive reports on annual financial and operational results. At the General Assembly, each representative may bring up to two farmers (local co-operative's directors) to participate in the meeting. At this meeting, representatives and farmers have the chance of challenging their governors about the direction of the company. Likewise, farmers' representatives vote on major issues.
- II. **Assembly (Assembléia Geral Extraordinária):** This Assembly is mainly aimed at discussing topical issues and voting on specific matters concerning the co-operative. It also represents an opportunity for farmers' representatives to interact among each other and discuss proposals with the Executive Directors and Boards' members.
- III. **Farm visits:** Under Itambé's Milk Supply and Supply divisions there is a team of milk supply advisers and a team of extension services providers, who are responsible for, among other tasks, visiting associated farmers on their farm in order to communicate and provide support on farm issues when necessary.

- IV. **Manufacturing plant visit (Nossa Fábrica):** This programme gives associated farmers the opportunity to visit Itambé's manufacturing plants and to have direct contact with executive directors and managers, experiencing the company's environment in a real-life context.

Turning to the printed communication channels, there are four main methods. All of them are designed to give associated farmers and their representatives a better understanding about the business, disclosing how the company's operations are performing and providing useful on-farm information.

- I. **Annual report:** The Annual Report is a document sent to all associated co-operatives containing information about the company's operations and detailed financial information about Itambé. In addition, it includes reviews from the Fiscal Board and auditors.
- II. **Monthly magazine (Produtor Itambé):** Since January of 2010 every associated farmer receives a copy of Produtor Itambé, the co-operative's monthly supplier magazine. Each issue includes updates about the co-operative's operations and information regarding one of its 31 associated co-operatives. Likewise, it contains a lot of useful on-farm information on topics such as milk quality, pasture management and animal breeding.
- III. **Newspaper article (Jornal Estado de Minas):** The company, once a month, publishes a full page article in the agribusiness section of a major newspaper in Brazil. The article usually contains information concerning current topics regarding the co-operative and Brazil's dairy industry. Every associated farmer receives a copy of the newspaper on that day.
- IV. **Letters to farmers:** Besides the structured printed mechanisms, such as the annual report (sent to the local co-operatives), the monthly magazine and newspaper article, letters from the company and the president are sent to farmers covering topical issues during the year when the necessity arises.

Another important communication mechanism is through the Internet. However, this channel still has limited reach in the supplier base since many farmers do not have Internet broadband at the farm.

The presence of Internet broadband occurs mainly on the bigger farms and those closer to urban areas.

- I. **Itambé's website:** The Itambé website provides information about different aspects of the co-operative including history, manufacturing plant location, main products, export destination and updates on the co-operative's activities. In addition, it has a section designed only for dairy farmers, to which a login is required, where they can have access to information concerning milk production data and milk quality, and check their statements.

- II. **Newsletter (Produtor Itambé online):** The online newsletter is sent to farmers on a weekly basis revealing important activities taking place around the co-operative's business and its associated co-operatives. There is also information about workshops, events and news updates. In addition, the newsletter has an unscheduled special edition, which brings articles and publications of particular interest to farmers.

In addition to the face-to-face channels, printed channels and electronic channels, there are also the contact centre and videos. Itambé has a service centre where farmers can call to discuss issues and ask for information. As regards to videos, the co-operative is currently preparing a series of videos which tell the story of each associated co-operative. Likewise, there are videos about technical workshops which are specially designed to improve dairy farmers' on-farm information.

Although these communication channels seek to cover Itambé's main methods of communication with farmers and their representatives, there are also other mechanisms such as field days, casual meetings of directors with small groups of farmers, and appearances of Itambé's representatives at industry events, public speeches and other occasions. All of these collaborate to build the co-operative's culture and develop a feeling of ownership among farmers.

Furthermore, the tier-one, local co-operatives also have communication channels between them and the farmers. However, since the tier-one co-operatives are managed independently from Itambé, each one has its own mechanisms. An interesting method in place in some local co-operatives is known as 'Núcleos Cooperativistas' (translated to English: Co-operative Centres). At these centres,

organised in wards, associated farmers, with a coordinator, meet once a month to discuss matters concerning the co-operative and on-farm issues. It works as a two-way communication channel disseminating information from the co-operative to farmers and also taking farmers' views and concerns back to the local co-operative.

Training and Extension services

Training and extension services are two important characteristics of Itambé's business model. The co-operative is committed to work with the associated co-operatives providing technical training to farmers on different fronts such as farming issues and milk quality. Likewise, it offers extension services aiming to ensure farmers' compliance with national regulations and to improve farm productivity.

As regards technical training, the co-operative, through its milk supply advisers and extension service team, provides to farmers on a daily basis or on field days and technical events important support regarding measures to be taken to improve milk quality and milk production efficiency. In addition, the co-operative sponsors the major conferences and seminars related to the dairy sector in Brazil, thereby offering to farmers the opportunity to attend these events.

On the subject of extension services, Itambé is committed to helping farmers with their dairy farming needs so that they can get the most out of their business and from the co-operative. In this respect, the co-operative has three main channels to provide support: 1) through its extension service team and milk supply advisers; 2) in partnership with service providers; and 3) through the local co-operatives' supplier service team.

The Itambé extension service team is comprised of a group of 20 professionals under the Supply Vice-President's coordination. This team is focused on disseminating technology and providing technical assistance to dairy farmers. Each professional has his own area of coordination providing about 80-100 on-farm visits per month. As regards the milk supply advisers, they are under the Milk Supply General Manager direction. This group is formed by 42 advisers who are spread out across

the three states in which Itambé operates. They are accountable for offering support on issues related to milk supply as well as giving technical assistance when required.

In relation to the partnerships with service providers, Itambé participates in three main programmes, namely Educampo, Unileite and Programa de Desenvolvimento da Pecuária Leiteira (PDPL). Each programme is conducted by a specific entity. Educampo is directed by Sebrae, a private entity of public interest, while Unileite and PDPL are conducted by two important agricultural universities in Brazil, Universidade Federal de Minas Gerais and Universidade Federal de Viçosa, respectively. These programmes aim to provide dairy farmers with on-farm support on milk quality issues, animal welfare, pasture management, and general management skills.

The last channel of co-operative support to dairy farmers is through the local co-operatives. Each tier-one co-operative has a different business structure, however, generally, they have a supplier service team comprised of veterinarians and technical advisers providing on-farm support when required by the farmers. There are about 40 professionals employed by the local co-operatives responsible for extension services. However, Itambé do not participate directly in this channel, being the responsibility of the local co-operatives to manage and finance.

Farming input supply programme

One of the advantages of farmers in organising in co-operatives is to achieve economies of scale by pooling resources. Farming inputs, primarily animal feed and fertiliser, have a significant potential to leverage farmers' operations. Used appropriately, they can mean the difference between making a gain or a loss. Therefore, ensuring that farmers access the right inputs in the right amounts is a significant role to be taken by the co-operative.

Ever since Itambé's animal feed division (Rações Itambé) was established in 1982, it has put its best efforts into offering associated farmers the most complete line of products for animal feeding. The company has three manufacturing plants located in the states of Minas Gerais and Goiás — one plant is managed by a third party — producing about 300,000 metric tonnes of animal feed a year. Uniting

high technology with good quality standards, each plant produces animal feed for dairy and beef cattle, swine, horses and poultry. The manufacturing plant located in the city of Contagem is the largest industrial animal feed plant in Brazil. It was a pioneer in the production of pelleted animal feed in the country. Each plant has a technical team of dairy cattle nutrition experts, who are available to assist associated farmers and outside clients with their needs.

Another important front in which Itambé offers support to farmers is through the rural retail stores (Armazém Itambé). Armazém Itambé is Brazil's largest network of stores dedicated exclusively to farm and livestock supplies. Comprising 24 stores in Minas Gerais and Goiás, the rural retail stores act as a distributor of important farming inputs, having a team of experts on farming issues providing assistance to farmers. Armazém Itambé main objective is to use its buying power to provide competitive pricing and savings on core farm inputs to Itambé suppliers. Associated farmers receive special discounts which are not given to the general public.

5.3.5.2 MILK PAYMENT MECHANISM

The milk price is the most important number in the co-operative. The Itambé milk payout represents the return farmers receive for supplying milk to the co-operative; it has two main components: the milk price and the dividends.

In the end of each month the Board of Directors determines the payment to be made for the milk that will be supplied by associated farmers in the following month. In determining that payment, the Board has regard to the dairy market conditions, the milk price in different regions of the country, the expected income from all activities of the Group and the costs of the company.

In addition to the milk price there is also the dividend. Associated farmers must hold one shareholder quota from one of the thirty-one local co-operatives in order to be able to supply milk to Itambé. As a consequence, at the end of the fiscal year farmers receive the dividends from the co-operative's results.

Turning now to the milk price and how it is established, Itambé has in place a milk quality payment mechanism which offers to farmers the opportunity to increase significantly the milk price if they achieve certain quality targets. On the other hand, farmers can also receive penalties for poor quality if it is not satisfactory. In addition, there are also other variables that influence the composition of the price such as milk volume, region and fidelity.

The milk price represents the value that the farmer receives per litre of milk supplied during one month. The co-operative takes samples for quality testing each time it collects milk from farmers. Based on these test results and three other variables, the co-operative establish the payment according to the formula: $b \pm q + l + r + f$ where:

b = cents per litre of milk (basic price)

q = cents per litre of milk based on quality testing results

l = cents per litre of milk based on logistics matters

r = cents per litre of milk based on region

f = cents per litre of milk based on fidelity

In Brazil, dairy companies establish the milk price on a monthly basis and the price varies significantly during the year¹⁵. Itambé's Board of Directors meets every month to define the basic milk price (b). This value represents the payment the farmer receives without any of the other variables.

The second factor in the milk price equation is the milk quality test results (q). Each farmer's milk is analysed in four different categories: 1) somatic cell count (SCC); 2) total bacteria count (TBC); 3) percentage of protein; and 4) percentage of milk fat. For each test there is a pre-established table indicating how much is added or deducted from the basic price based on the results. Farmers may receive approximately a 25 per cent increase on the basic price if they achieve the maximum grade in the four tests.

¹⁵ See Figure 3.8 on page 55.

After establishing the basic price and revealing the additional quality benefit, another factor that influences the final price is related to logistics (l). There is a bonus that farmers may receive that is related to the volume of milk supplied and the distance between the farm and the closest manufacturing plant. The co-operative recently added this factor in the equation because private dairy companies that compete against the co-operative were persuading large-scale farmers to start supplying their companies by offering a slightly higher milk price. Thus, to retain these farmers the co-operative started to offer a volume bonus.

Another variable that was recently included to cope with the increasing competition among dairy companies is the region variable (r). In regions where competition among companies is very fierce, the co-operative may give a bonus to farmers to secure its supplier base.

As regards the fidelity aspect, farmers that supply milk to the co-operative receive a bonus proportional to the period of time that they have been constant suppliers. Farmers reach the bonus peak after two years supplying milk to Itambé; they keep receiving the maximum amount as long as the milk supply is steady.

5.3.5.3 SUPPLIER SELECTION AND ASSESSMENT

Dairy farmers have a fundamental role in the co-operative, not only because they are owners of the business, but also because they provide the most valuable input of the company — milk. In this respect, having milk suppliers who meet the co-operative's quality standards and the national regulations is a key aspect of the business.

In order for a dairy farmer to commence supplying milk to Itambé it is necessary to be associated with one of the thirty-one local co-operatives which form the Group. Each local co-operative, as previously stated, is an independent business, thereby having its own set of rules and requisites.

In general, there are no significant barriers to a farmer starting to supply milk to the co-operative. However, milk quality is considered a crucial aspect and Itambé is constantly checking farmers' compliance with the national regulations, namely Instrução Normativa 51 (IN51).

The milk quality payment mechanism implemented by the co-operative is in a form that emphasises to its farmers that good quality milk is imperative and the company is committed to providing support so that farmers and the co-operative can achieve their utmost results.

5.3.6 RELATIONSHIP BETWEEN FARMERS AND CO-OPERATIVE

A good relationship between associated farmers and the co-operative is essential in creating a prosperous business. In order to have a successful long-term relationship three variables are considered critical, namely trust, level of interaction and commitment. For the purpose of this research these three variables will be analysed, taking into consideration the farmers' views and attitudes and their assessment of the relationship.

As regards to trust, which can be defined as the confidence that the co-operative is taking all necessary measures to improve returns for farmers and the company, all farmers agree, revealing that they can rely on Itambé. Farmers stated that the co-operative is very faithful to its promises and is always punctual concerning milk payment, which was identified as a critical factor. Moreover, farmers indicated that tier-one, local co-operatives' support in presenting their views and concerns to the central co-operative is a very important feature. The local co-operatives play a significant role in the relationship between Itambé and dairy farmers.

If we now turn to the farmers' assessment of the level of interaction between them and the co-operative the result is also interesting. Overall, farmers are very satisfied with the importance that Itambé gives to communicating with them. Farmers pointed out that co-operative's programmes in transferring technology are very helpful, likewise, the monthly magazine provides a better understanding about the company and brings a lot of useful information to on-farm issues. Farmers also noted that the local co-operatives' managing directors are very important in being an efficient

point of contact when there is any type of issue to be solved or when any information about the co-operative is needed.

However, as occurred in the New Zealand company, and due to perhaps different profiles of farmers, a few farmers suggested that the amount of paperwork and material received by post could possibly be reduced. These farmers expressed the belief that some farmers don't have time or don't want to read certain publications, and there is also some situations of illiterate farmers. Finding the correct balance between too little and too much information is a challenge; especially when dealing with a large supplier base and with so many different types of individuals.

On the subject of commitment, in an implicit wish to continue the relationship, farmers pointed out unanimously that they are satisfied with the way the co-operative is governed and managed, therefore they will remain in a relationship with the company in the future. Farmers noted that although some private companies pay higher prices for their milk at first, in the long run the co-operative's price is more stable and secure. In addition, they suggested that the relationship with the co-operative is more constructive and there are also personal bonds which are lacking in private companies.

5.4 SUMMARY

Chapter Five comprises two individual case study reports, revealing information about the companies' backgrounds, governance structures, supply chain management practices and their relationships with farmer suppliers. Of the two selected dairy companies one, Fonterra Co-operative Group, is situated in New Zealand and has approximately 10,500 milk suppliers. The other, Cooperativa Itambé, is located in Brazil and has about 8,500 milk suppliers. The case study analysis offers an understanding of each dairy co-operative as a stand-alone entity depicted in the context of its environment. This Chapter provides the foundation for the discussion of the two studied companies addressed in Chapter Six.

CHAPTER SIX

CROSS-CASE DISCUSSION

6.1 INTRODUCTION

A cross-case analysis, based on the two studied co-operatives, is now presented. A comparison of the relevant features and patterns that emerged from the individual case analysis is presented and discussed in the next sections as follows:

1. Ownership structure
2. Governance structure
3. Supply chain management practices
4. Relationship between farmers and co-operative

6.2 OWNERSHIP STRUCTURE

The ownership structure of an enterprise has a significant effect on the way the organisation is governed and managed. Problems associated with the decision-making process and equity formation for long-term investments within the co-operative entity are well known and have been subject to extensive analysis in the literature (Hoffmann, 2005). Fonterra and Itambé have a co-operative form of business, where dairy farmers are the owners of the company. Although there are similarities between the two case companies, there are also significant differences.

As regards Fonterra, the co-operative is owned by about 10,500 dairy farmers who are shareholders of the company. Farmer shareholders are required to hold one share for each kilogram of milk solids they supply to the co-operative in a season. The Group recently re-structured its capital structure, allowing farmers to hold up to two times their production in shares, consequently holding dry shares, which are shares that are not backed up by milk supply. Other measures approved by farmer

shareholders in the new capital structure, but not in place yet, are the creation of a Fonterra Shareholder Market where farmers will trade shares among themselves and a fund called 'The Fonterra Shareholders Fund' which will pay farmers for the right to receive dividends and the gain or loss from any change in the value of the shares.

In relation to Itambé, the co-operative is owned by a confederation of thirty one tier-one, local co-operatives which in turn are owned by approximately 8,500 dairy farmers and also some dry farmers – farmers who do not produce milk. Tier-one, local co-operatives must hold a number of the Group's shares proportional to the volume of milk they supply to the company in a year, whereas farmers are required to hold only one shareholder quota from one of the associated local co-operatives to become a member, independently of the volume of milk supply.

Despite the fact that both co-operatives are farmer-owned enterprises, in the New Zealand case company farmers have a direct ownership relationship with the co-operative, holding a number of shares equivalent or greater than the volume of milk supply. On the other hand, in the Brazilian case company farmers do not own shares in the co-operative; instead, they own a shareholder quota from one of the local co-operatives which comprise the Group. Furthermore, there is no relation between the number of shareholder quotas and the volume of milk supply in the Itambé case, as each farmer is required to hold only one quota. Another noteworthy difference between the cases is that New Zealand dairy farmers have a substantial amount of capital invested in Fonterra, whereas in Itambé the shareholder quota represents a symbolic price, in most cases not significantly affecting farmers financially.

Turning now to the voting system, there are similarities and dissimilarities between the case companies. One significant similarity concerns the voting rights. In both companies farmers are the only entity with voting rights in the co-operative, which ensures that their needs and views are considered. Nevertheless, the way the voting system functions is structured differently in each company. In Fonterra any major change in the co-operative is put to a vote by farmer shareholders. Each farmer shareholder has one vote for each 1,000 shares he holds. As regards Itambé, decisions are voted on by one representative of each tier-one, local co-operative, usually the president.

Individual farmers do not get involved in decisions at the central co-operative level. However, issues concerning the local co-operatives are voted on by individual dairy farmers from each associated co-operative. In contrast to Fonterra's system, where votes are proportional to the number of shares held, decisions at Itambé are taken by a system of one man, one vote.

6.3 GOVERNANCE STRUCTURE

Governance is a current topic in today's business environment. Donoso (2003) points out that co-operatives need governance structures that are strong enough to maintain the co-operative spirit of the organisation, but they also have to be flexible enough to adapt and cope with the current competitiveness of the marketplace.

Fonterra has a governance structure made up of three main bodies: 1) Board of Directors, 2) Executive Management, 3) Shareholders' Council. Each entity plays a crucial role within the organisation. As regards Itambé, the co-operative governance structure comprises four main bodies: 1) Board of Directors, 2) Fiscal Board, 3) Executive Directors, 4) General Assembly. Each of them provides critical support to the performance and monitoring of the organisation.

Fonterra's Board of Directors is formed by nine elected farmer directors and four appointed outside directors. Appointed directors have a significant role to play in providing a balance of independence, skills and experience to the Board, complementing the deep understanding of the dairy industry provided by the farmer directors. Itambé's Board is formed by sixteen farmer directors where four are executive directors. The Brazilian Co-operative Law (Lei das Sociedades Cooperativas – 5.764/1971) states that the Board of Directors must be formed only from farmer directors; there is no option of having outside directors on the Board.

The Executive Management team, led by the CEO, is responsible for the day-to-day management of the Fonterra Group. The members of the team are independent and free of any supplier relationship with the co-operative. On the other hand, in the Itambé Group, the Executive Directors, managers of

the business, are four farmer directors. One of the directors is the President, responsible for leading the organisation.

In terms of the farmers' representative body, both companies have an entity designed for that. The Fonterra Shareholders' Council is a body of 35 farmer shareholders elected to represent the interest of the shareholders as Fonterra suppliers, owners and investors. Similarly, Itambé has a General Assembly, formed by 31 members who are the representatives from each tier-one, local co-operative and its dairy farmers. Both representative bodies are crucial in presenting the views and concerns of dairy farmers to the company and ensuring the company is governed according to farmers' desires.

Although the Fonterra Shareholders' Council (FSC) and the Itambé General Assembly (IGA) share similar concepts, there are also a few differences between the two bodies. In relation to FSC, it does not vote on behalf of farmers, functioning only as an interface between the co-operative and farmer shareholders. Farmers still vote whenever it is necessary. In contrast, IGA's representatives vote on all matters concerning the company, such as defining the Board of Directors and major changes in the company; individual farmers get involved only at their local co-operatives.

The governance structures in both companies are committed to a system of corporate governance that meets the requirements of the national regulations in each country and also best practice appropriate to a co-operative. It is worthwhile mentioning that Fonterra's structure facilitates a greater level of interaction between individual farmers and the co-operative, which contributes, to a certain extent, to developing a feeling of ownership among the suppliers.

6.4 SUPPLY CHAIN MANAGEMENT PRACTICES

In today's fast-changing marketplace, where competition among organisations is fierce, to create a competitive advantage companies need to expand the business's focus across the organisations' boundaries to encompass the entire supply chain. In that context, when adopting a supply chain management philosophy, organisations must establish management practices that permit them to act and behave consistently with the philosophy.

Li et al. (2006) define supply chain management practices as a set of activities undertaken by an organisation to promote effective management of its supply chain. For the purpose of this research, focusing mainly on the interface between the co-operative and dairy farmers, three main areas were considered crucial: 1) Co-operative and farmers interaction; 2) Milk payment mechanism; 3) Supplier selection and assessment.

6.4.1 CO-OPERATIVE AND FARMERS INTERACTION

A good relationship between the company and its farmer suppliers is essential to create a prosperous business. In this respect, co-operatives need to provide good-quality services and strive to develop in the supplier base a feeling of ownership, making farmers feel like the owners of the business and actively participating in the organisation rather than being simple suppliers of raw material.

Fonterra and Itambé are aware of the significant benefits which can be achieved by having a participative and integrated supplier base, thus both companies have in place a comprehensive network of channels to interact with dairy farmers. The two studied co-operatives use a mix of face-to-face, printed and electronic communication mechanisms, likewise offering training and extension services and also providing a farming input supply programme.

As regards communication, the co-operatives have an extensive number of mechanisms in place, which can be divided into four different methods: 1) face-to-face; 2) printed; 3) electronic; 4) others. Face-to-face interventions represent the channels where the farmer has direct contact with someone speaking as a representative of the co-operative. Both case companies give special attention to this method, since farmers in general appreciate having a face-to-face contact. Fonterra holds an Annual General Meeting every year, where farmers have the opportunity to hear about the company's financial results and topical issues directly from their leaders. Likewise, Itambé organises a General Assembly every year to provide information about the company's results, however, the presence in this meeting is limited to one representative of each local co-operative and up to two farmers (local co-operative's directors). As Itambé is composed of a confederation of tier-one, local co-operatives, individual farmers get involved only in decisions at their local co-operative level.

Another interesting mechanism in which Fonterra provides information about the co-operative is through governors and farmers meetings. Directors have meetings with farmer shareholders on a regional basis communicating the direction and performance of the company and also getting feedback from them on key issues. As regards Itambé, the tier-one, local co-operatives' directors have a key responsibility in disseminating information about the central co-operative and bringing farmers views and concerns to the company.

Itambé and Fonterra also have other methods to communicate face-to-face with individual farmers. Both companies have specialised teams which are in contact with farmers on a regular basis, visiting them on their farms, communicating and providing support on farming issues when the necessity arises. Another method found in both companies is known as manufacturing plant visits. The co-operatives give farmers an opportunity to visit the manufacturing sites and to converse with executives and managers, experiencing the company's operations in real life. Furthermore, both companies engage in other mechanisms such as field days, casual meetings of directors with small groups of farmers and the attendance of company representatives at industry events, public speeches and other occasions. All these face-to-face contacts are most important in better integrating and developing the feeling of ownership among the suppliers.

The printed communication channels, used by both co-operatives, are designed to give dairy farmers a better understanding about the businesses, disclosing information about the companies' operations and providing useful on-farm information. The Fonterra Annual Report and the Shareholders' Council Report are two key publications aimed at providing farmers with a detailed analysis of Fonterra's operational and financial performance. Besides annual reports and letters, both companies use a monthly magazine to keep farmers informed: 'Farmlink' in the case of Fonterra and 'Produtor Itambé' in the Brazilian company. Itambé, in order to access a broader audience, also publishes, monthly, a full page article in the agribusiness section of an important newspaper in Brazil, covering themes related to the co-operative and Brazil's dairy industry. Every farmer supplier receives a copy of the newspaper on that day. Printed communication methods are important in offering farmers information about the co-operatives and also updating them on relevant matters concerning the companies.

Another significant communication mechanism is the Internet. Fonterra's Fencepost web site is an important channel for operational interaction between the co-operative and shareholders. The company promotes the web site to the suppliers, highlighting the benefits of using the channel. As regards Itambé, the co-operative also has electronic methods to interact with farmers; however, the co-operative has experienced some difficulties related to Internet infrastructure in rural communities where broadband service is not as common as in New Zealand's rural sector. It is worthwhile mentioning that Fonterra experienced the same problem a couple of years ago but nowadays Internet broadband has improved coverage in the rural areas of the country which contributes to minimising the problem. Therefore, the companies are at different stages on this subject — Fonterra is more focused on improving the mechanisms currently in place whereas Itambé is focused on developing and improving its methods and seeking solutions to increase farmers' access to the Internet on farm.

Training and extension services are two important mechanisms for providing education to farmers. Donoso (2003) suggests that education is a key factor in the integration of farmer suppliers and co-operatives. If considered a unique service offered by the co-operative, education has the potential to create a strong sense of belonging and motivation among the suppliers, which contributes to differentiating co-operatives from private companies. Training and extension services are important characteristics of Fonterra and Itambé business models.

Fonterra offers to farmers basically two different categories of training: corporate training and technical training. As regards corporate training, the co-operative provides programmes that are directed to farmer shareholders with different levels of understanding about the organisation. These programmes collaborate to elevate their knowledge of the co-operative and work as a catalyst for those who might want to move into directorship and governance roles within the company. Turning to technical training, the co-operative, through its milk quality advisers and supplier service team, provides to farmers on a daily basis or on field days and via discussion groups, important support and training. Itambé, on the other hand focuses basically on technical training. The Brazilian co-operative puts considerable effort into improving farmers' milk quality and on-farm productivity; farmers' technical up-skilling is considered a vital aspect.

Both co-operatives share similar concepts regarding extension services. They are committed to helping farmers with their dairy farming needs so that they can get the most out of their business and from the co-operative. Itambé has three main channels to provide support to farmers; 1) through its extension service team and milk supply advisers; 2) in partnership with service providers; 3) through tier-one, local co-operatives' supplier service teams. Each channel plays a crucial role in transferring technology to farmers. One of the characteristics of milk production in Brazil is the large number of milk production systems in use, varying from highly specialised dairy farms producing 30,000 litres of milk a day, to small-holder farms producing daily less than 100 litres of milk. Therefore, Itambé extension services activities have to be very flexible to cope with this variation of milk production systems and to be able to provide support to different profiles of farmers. In contrast, dairy farmers in New Zealand, to a certain extent, have similar production systems that somehow contribute to Fonterra's extension team. Nevertheless, the company considers it critical to have an efficient and effective team to provide support whenever the necessity arises, so the company has four main divisions: area managers; supplier service team; food safety team; and sustainable dairying team.

In relation to farming input supply programmes, the two studied co-operatives have in place mechanisms to ensure farmers have access to the right inputs at a competitive price. Farming inputs have a significant potential to leverage farmers operations if used appropriately. Fonterra has a joint venture called RD1 which is New Zealand's largest retailer of agricultural services to dairy farmers. This company is responsible for providing competitive farm inputs for Fonterra suppliers. As regards Itambé, the company has two business divisions focused on farming inputs: the animal feed division (Rações Itambé); and rural retail stores (Armazém Itambé). These divisions aim to provide competitive pricing and savings on core farm inputs to Itambé suppliers. Despite the fact that the mechanisms adopted in both companies have the same objective – provide farm inputs at a competitive price – they are structured differently. The New Zealand company, in partnership with an Australian company specialising in agribusiness products and services, established a joint venture that is focused mainly on farming inputs, namely RD1. In contrast, the Brazilian case company has the farm inputs division in-house, in other words managed and controlled by the Group. These different methods of providing farming inputs represent a common question faced by companies

nowadays: should we buy, make or ally? (Fischer, 2009b). The studied case companies indicated that they are pleased with the current outcomes of their methods.

6.4.2 MILK PAYMENT MECHANISM

The milk price is the most important number in both dairy co-operatives. Farmers are always paying close attention to variations of the milk price and how it affects their business. Due to the unique characteristics of each country and their history concerning the dairy industry, milk processors in New Zealand and Brazil have different approaches to milk prices and this was observed in the case studies.

In the New Zealand case company the milk price is established on an annual basis. At the beginning of the season (August), the company sets an indicative milk price based on the price of a basket of dairy commodity products, the forecast foreign exchange rate and the company's costs. During the season the company updates farmers about the international dairy market and commodities prices and how they could affect the indicative price. The price is not paid out in full to farmers until October of the following year (a 14-month gap), when the company officially establishes the final price. The final milk price tends to be higher than the indicative price, which enhances farmers' revenue. Another interesting feature of New Zealand's milk payment mechanism is that farmers are paid based on kilograms of milk solids supplied instead of litres of milk, which is commonly seen in other parts of the world. Milk solids represent the amount of milk fat and protein contained in the milk; in general one kilogram of milk solids is equivalent to 12 litres of milk.

In contrast to New Zealand's system, dairy companies in Brazil establish the milk price on a monthly basis. Itambé determines at the end of each month the payment to be made for the milk that will be supplied by farmers in the following month. In establishing the payment the company has regard to the dairy market conditions, the milk price in different regions of the country, the expected income from activities of the Group and the costs of the company. Therefore, dairy farmers supply milk in the first day of the month knowing the value they will obtain for it. It is worthwhile to mention that this is not a common practice among dairy companies in Brazil. In general, milk processors define the milk

price after the month; as a result, farmers get to know the price only after they have supplied to the company. Itambé, in defining the milk price prior to the supply, aims to offer farmers a more stable scenario, where the farmers know in advance the income they will receive in the following month. However, by doing this the co-operative suffers the consequence of competitors that try to capture the co-operative's milk suppliers by offering a slightly higher milk price.

These considerable differences in milk payment mechanisms between the New Zealand and Brazilian case companies can be justified, to a certain extent, by the different characteristics of the dairy industry in each country. Fonterra is the largest dairy company in New Zealand, processing approximately 92 per cent of the country's milk production. The co-operative does not have significant competitors¹⁶, being the only dairy company that collects milk in most regions of the country. On the other hand, in Brazil the competition among dairy companies is very fierce and it has been increasing as a result of intense amalgamation of the industry in recent years.

Another distinction between the countries is that dairy farmers in New Zealand are used to a milk payment system which establishes the milk price on an annual basis, farmers receiving the one price for the milk supplied in an entire season. A possible explanation for this might be New Zealand's seasonal milk production pattern, where the volume of milk produced varies significantly during the year. In contrast, in Brazil the milk price is established by dairy companies every month, which creates a certain volatility in the market and makes it harder for farmers to do long-term planning. Speculation amongst milk processors oscillates the market even more, causing significant fluctuations in the milk price. For this reason, Itambé began to define the milk price in advance; offering farmers the opportunity to know the value they will obtain for their milk before the supply. However, as previously noted, competitors take advantage of this by offering a slightly higher milk price to try to take milk suppliers from the co-operative.

Despite Fonterra and Itambé having different milk payment mechanisms, the New Zealand and Brazilian co-operatives aim to provide farmer suppliers with the highest possible milk price and both also pay dividends as a return on the farmer's investment.

¹⁶ The number of private dairy companies has been increasing in New Zealand in recent years, which reveals a possible threat to Fonterra's business.

6.4.3 SUPPLIER SELECTION AND ASSESSMENT

One of the biggest challenges for business nowadays is to effectively integrate their supply chains (Sadler, 2007). Trends in supply chain relationships reveal the necessity to increase cooperation and coordination among supply chain partners in order to enhance efficiency. In this respect, supplier selection and assessment are two key measures to be taken by the organisation to ensure that members of its supply chain act in accordance with its requirements so that the company can achieve its best results.

Dairy farmers have a vital role in Fonterra and Itambé not only because they are the owners of the businesses, but also because they are the providers of the most valuable input of the companies — milk. In this respect, having milk suppliers who meet the co-operatives' regulations and quality standards and also the national and international regulations is a key aspect of the business. The farmer-processor link in the dairy value chain is critical; members involved in the chain should have special attention from this relationship.

In order for a dairy farmer to commence supplying milk to Fonterra it is necessary to comply with a series of regulations set by the New Zealand Food Safety Authority (NZFSA) for farm dairies. In addition, the farmer is required to comply with the co-operative's set of rules in relation to a number of things including milk storage and refrigeration and tanker access. In relation to Itambé, as the co-operative is a confederation of tier-one, local co-operatives, the local co-operatives are responsible for admitting the supplier. In most cases there are no significant barriers to a farmer becoming a member of the local co-operative. The New Zealand company, by having in place a structured system of policies and requirements, with the support of the national regulations set by NZFSA, is in a better position to ensure an organised and complying supplier base.

Regarding supplier assessment, Fonterra have a structured system, supported by the NZFSA regulations which require an annual farm dairy assessment by an approved Farm Dairy Assessor. The co-operative has two contract service providers who are responsible for conducting the assessments. The service providers visit every farm, auditing them against a wide-ranging list of

items including: 1) sanitation of plant and premises; 2) facilities and structures; 3) regulatory requirements and records; 4) quality management (e.g. Best On-farm Practice); 5) environment and animal welfare. This helps to ensure that milk suppliers are constantly meeting the requirements. On the other hand, Itambé tracks its milk suppliers basically through the milk quality test results; high milk quality is considered imperative. Brazil's regulations do not require an on-farm dairy assessment, perhaps this is one of the indications of New Zealand's dairy industry maturity in comparison with Brazil's dairy industry, which is still in the developing stage.

6.5 RELATIONSHIP BETWEEN FARMERS AND CO-OPERATIVE

Good relationship management with suppliers is a very important element for a prosperous enterprise. In the past, emphasis was placed on adversarial or arms-length relationships as a way of doing business. Nowadays, closer, trust-based and long-term relationships with supply chain partners are necessary characteristics in sustaining competitive advantage. In farmer-owned co-operatives, a good relationship between the company and suppliers, who are also shareholders, becomes even more important, being crucial to the success of the company.

Fonterra and Itambé consider the management of the relationship with milk suppliers a very important aspect of the business. Both companies have a comprehensive network of channels to directly and indirectly interact with dairy farmers. Fonterra has in place a quantitative tool that tracks farmers' loyalty monthly, assessing farmers' satisfaction level with the services provided by the co-operative and identifying points for improvement. As regards Itambé, by following closely the regions where the turnover of dairy farmers is higher, the company defines measures to be applied to improve the services provided and the integration with the dairy farmers, thereby enhancing farmers' loyalty.

The importance that the two co-operatives give to management of the relationship with milk suppliers can be observed in the positive assessment farmers' give of their relationship with the companies. Milk suppliers from both co-operatives are very pleased with the way the organisations are governed and managed. Fonterra's suppliers pointed out that the co-operative is very transparent; volunteering a comprehensive amount of information. Likewise the Shareholders' Council effectively plays its

representative role in monitoring and being an efficient point of contact whenever necessity arises. With Itambé, milk suppliers are also very satisfied with the co-operative. They stated that the company is very faithful to its promises and provides support on many different fronts. In addition, farmers indicated that the good relationship with the company is a key factor that keeps them with the co-operative instead of supplying milk to private companies — thus revealing the importance of the relationship management.

Despite the positive views from farmers about the studied co-operatives, it is necessary to be alert that relationship management is a continuing issue. A few milk suppliers from both companies expressed the belief that some farmers don't have time, or perhaps don't want to read certain publications, which could possibly be reduced or perhaps be sent to only farmers who are keen to have access to them. Finding the correct balance between too little and too much information is certainly a challenge; especially when dealing with a large supplier base as in the case of Fonterra and Itambé. The focus on building and improving communication channels and providing good services is a continuous process in both companies. Better-targeted communication and increased farmer involvement in the co-operative are two key factors which the co-operatives should endeavour to be engaged in and achieve.

6.6 SUMMARY

Chapter Six carries a cross-case analysis of the two studied co-operatives focusing on their governance structures and supply chain management practices, investigating how these may affect the co-operative's relationship with farmer suppliers. It reveals that although there are differences between the two studied companies, both companies seek to have governance structures and supply chain management practices which are designed to enhance coordination and integration in the value chain. In addition, the findings suggest that governance structures and supply chain management practices influence the relationship between co-operatives and dairy farmers by contributing to better integrating milk suppliers and the company.

CHAPTER SEVEN

CONCLUSION

7.1 RESEARCH CONCLUSIONS

The primary motivation of this research was the desire to investigate how governance structures and supply chain management practices may influence the relationship between dairy farmers and their co-operative. It also aimed to develop a better understanding of the dairy industry in New Zealand and Brazil.

The dairy industry is of extreme importance to New Zealand's and Brazil's economies. In New Zealand it contributes to 7 per cent of GDP and approximately 25 per cent of the country's export earnings, while in Brazil it is an important source of revenue and employment. The Brazilian dairy primary sector involves nearly five million people (more than New Zealand's population) revealing the sector's significance not only from an economic aspect, but also on the social side.

In analysing the dairy industry in both countries one opening conclusion can be drawn: The dairy industries in New Zealand and Brazil have different characteristics and levels of maturity. On one hand there is New Zealand, which is the world's largest dairy exporter, having a highly consolidated industry (one single company handles more than 90 per cent of the total milk supply), producing annually about 16 billion litres of milk by approximately 12,000 specialised dairy farmers. On the other hand, there is Brazil — which, despite the recent amalgamation process that has taken place, still has a fragmented industry — producing about 27 billion litres of milk by approximately 1.2 million dairy farmers.

As regards the international market, although Brazil's participation now is only modest, it is worth noting that recent developments in the Brazilian dairy sector, coupled with the availability of extensive arable land, fresh water, year-round sunshine and improved technologies, might lead to increased international competitiveness. At this stage, New Zealand's dairy industry is more coordinated and integrated than Brazil's, which reflects the greater level of maturity of New Zealand's dairy sector.

Despite the importance of better understanding the dairy industries in New Zealand and Brazil, the main purpose of this research was to answer the following research question:

How do governance structures and supply chain management practices affect the relationship between dairy farmers and their co-operative?

In this research endeavour, two case studies were analysed: Fonterra Co-operative Group and Cooperativa Itambé. Based on the information gathered in the case studies and a comprehensive literature review of the topic, the following findings have emerged regarding the impact of governance structures and supply chain management practices.

Governance structures

A co-operative's governance structures have a substantial influence on the relationship between dairy farmers and the company. They are the means by which farmers gain an understanding of how the organisation is managed and how farmers' views and concerns are taken into consideration. As business models increase in complexity, co-operatives, to prevent farmers from being distanced from the company, should have among the governing parties a representing body which links the Board of Directors and the farmer suppliers, monitoring the performance of the company and representing farmers' interests.

The representing body, which in the New Zealand company is called Fonterra Shareholders' Council and in the Brazilian company is known as the General Assembly, was identified as a critical factor for farmer suppliers to trust the co-operatives. In addition, it was found that a representing body enhances the level of interaction between the co-operative and its members, being an important information channel and connecting farmers with the company.

The representing body is a form of co-operative to distinguish themselves from private corporations, and promote the co-operative spirit. The challenge for co-operatives is to establish governance

structures that enhance communication and integration with supplier-shareholders but at the same time provide mechanisms that allow the company to be efficiently governed and managed.

Supply chain management practices

Supply chain management practices — in other words, the set of activities undertaken by an organisation to promote effective management of its supply chain — have a critical effect on the relationship between dairy farmers and their co-operative. In this respect, the following mechanisms were identified as important features of the farmer-processor interface:

- **Co-operative and farmer interaction:** The level of interaction between the company and milk suppliers is a key factor for the quality of the relationship. Three aspects of the interaction were assessed:
 - **Communication:** This study reveals that effective communication is vital. It contributes to linking milk suppliers with the company while building trust and commitment. It was found that finding the correct balance between too little and too much information is a challenge; especially when dealing with a large supplier base.
 - **Training and extension services:** These two interaction mechanisms are key factors in the integration of farm suppliers and the co-operative. Additionally, it contributes to developing a sense of commitment in suppliers to the company, since farmers see evidence that the co-operative really is striving to make their business (dairy farming) prosper.
 - **Farm input supply programme:** The results of this investigation shows that farm input supply programmes affect the relationship between farmers and the organisation by facilitating farmers' access to the right supplies at a competitive price. Thus, contributing to enhance integration and farmer's commitment.

- **Milk payment mechanism:** The milk price is the most important number in dairy co-operatives; therefore, in the relationship between the company and milk suppliers, the payment mechanism is clearly an important topic. It was noticed that a punctual milk payment is a decisive factor for farmers to trust and to be committed to the co-operative. Furthermore, the results suggest that although farmers are in most cases eager to have a higher milk price — which is understandable — farmers tend to accept the variations in the milk price rather better when they comprehend the milk price calculation methodology.
- **Supplier selection and assessment:** The supplier selection and assessment are two important methods of ensuring that milk suppliers comply with the regulations, so consequently it has an effect on the relationship between the co-operative and the farmers. It was noted that although few farmers tend to be initially sceptical about having a farm assessment, since it involves auditing their premises and operations, it contributes to them keeping a record of their business, which is a good tool for enhancing the performance of their farms.

Two overall conclusions have emerged from these findings. First, governance structures and supply chain management practices have a significant effect on the relationship between dairy farmers and their co-operative. They influence the relationship by collaborating to better integrate milk suppliers and the company while developing in farmers a sense of trust and commitment to the co-operative. Collectively, this greater integration and trusting, long-term relationships contribute to companies sustaining their competitive advantage.

The second conclusion that can be drawn is that although there are differences between the New Zealand and Brazilian companies, they both seek to have governance structures and supply chain management practices which are designed to enhance coordination and integration in the value chain. The different characteristics of the dairy industry in each country require different models from the co-operatives, however, the concepts of integration and collaboration between the milk suppliers and the company are critically important within each organisation.

7.2 LIMITATIONS OF THIS STUDY

A number of caveats need to be noted regarding the present study. First, this research has investigated only two dairy co-operatives, one from New Zealand and one from Brazil, therefore the results may not represent the total environment of the dairy industry in these countries — especially in Brazil, where there are a significant number of dairy processing companies.

As regards the sample criteria for choosing the farmer interviewees, different approaches were used in New Zealand and Brazil. In New Zealand, the researcher established contact with a dairy farmer and a consulting company who in turn facilitated further introductions, while in Brazil the case study company was responsible for choosing the farmers. The study used different methods because the New Zealand case study company did not want to get involved in the sampling, while in Brazil the case company was responsible for organising the farm visits in order to avoid logistics problems because of the limited period of time available to conduct the interviews. Thus, it could be argued that the sampling led to like-minded participants. However, the objective of the sample selection was not to seek a body representative of the group; rather, the sample selection aimed to find a representation of the understanding of the group. Therefore, the sample is arguably appropriate for this particular research study. Since the sample is suitable for the specific objective of this study, it suggests that this research drew data from a relatively small sample.

Another limitation of this research is that the investigation was confined to the interface between the co-operative and its farmer suppliers. The study would have benefited from investigating the business relationships between other members of the dairy value chain, including the relationship between suppliers and dairy farmers, and milk processors and food retailers.

7.3 DIRECTIONS FOR FUTURE RESEARCH

Suffice to say, one study cannot address all aspects of a complex situation that touches upon issues of governance structures, supply chain management practices, relationship management and the dairy industry. Therefore, it is worthwhile considering some general directions for future research:

1. As this study sampled a small number of dairy farmers, further research interviewing a larger number of dairy farmers should be undertaken for evaluating the effectiveness of the communication channels that are in place connecting milk suppliers and dairy processing companies.
2. Further research should be conducted investigating the possible benefits of adopting the New Zealand milk payment mechanism — where the milk price is established on an annual basis — in countries such as Brazil and the United States, where there is monthly volatility in the milk price.
3. Further research should be done to study all links of the dairy value chain in New Zealand and Brazil, including input suppliers, dairy farmers, processing companies, marketing and organisations involved, such as DairyNZ, Embrapa Dairy Cattle and Ministries of Agriculture. This would enable the comparison of the entire dairy value chain in both countries while identifying strengths and weakness.
4. Further research should be conducted to investigate how dairy companies can enhance their sustainability practices by increasing the level of integration in their supply chains. The research focus should be on three key links in the dairy value chain: dairy farmers, milk processors and food retailers.
5. Further research should be done to investigate the opportunities and constraints for Brazil's dairy industry to become an important player in the international market. In addition, to analyse how dairy companies should organise their supply chains to benefit from the opportunities and to minimise the constraints.

REFERENCES

- Albers, S., Gehring, M., & Heuermann, C. (2003). A configurational approach to supply chain governance. In S. Seuring, M. Muller, M. Goldbach, & U. Schneidewind (Eds.), *Strategy and organisation in supply chains* (pp. 99-113). New York, NY: Physica Verlag Heidelberg.
- Alvarado, U. Y., & Kotzab, H. (2001). Supply chain management: the integration of logistics in marketing. *Industrial Marketing Management*, 30(2), 183-198.
- Angot, J., & Milano, P. (2001). Linking concepts and data. In R. A. Thietart (Ed.), *Doing management research* (pp. 132-146). London, United Kingdom: Sage Publications.
- Australian Bureau of Agricultural and Resource Economics [ABARE], & Ministry of Agriculture and Forestry [MAF]. (2006). *Agricultural economies of Australia and New Zealand: Past, present, future*. Canberra, Australia: ABARE.
- Ávila, C., Martins, P. C., & Moreira, M. (2009). *Itambé: 60 anos*. Belo Horizonte, Brazil: Itambé.
- Ballou, R. H. (2004). *Business logistics/ supply chain management: planning, organising, and controlling the supply chain*. (5th ed.). Upper Saddle River, NJ: Pearson Education.
- Ballou, R. H. (2006). The evolution and future of logistics and supply chain management. *Produção*, 16(3), 375-386.
- Bankuti, S. M. S. (2007). *Análise das transações e estruturas de governança na cadeia produtiva do leite no Brasil: A França como referência*. Unpublished doctoral dissertation, Universidade Federal de São Carlos, São Carlos, Brazil.
- Barton, D. (1989). What is a co-operative?. In D. W. Cobia (Ed.), *Co-operatives in agriculture* (pp. 1-20). Englewood Cliffs, NJ: Prentice-Hall.
- Basu, R., & Wright, J. N. (2008). *Total supply chain management*. Burlington, MA: Butterworth-Heinemann.
- Biber, S. J. H., & Leavy, P. (2004). *Approaches to qualitative research*. New York, NY: Oxford University Press.
- Bijman, J. (2002). *Essays on agricultural co-operatives: governance structure in fruit and vegetable markets*, (Research. Rep. No. ERIM Series 15). Rotterdam, The Netherlands: Erasmus University Rotterdam, Erasmus Research Institute of Management.

- Billones, R. G. (1999). *Consumer and farmer perceptions of the New Zealand dairy industry's image*. Unpublished master's thesis, Massey University, Palmerston North, New Zealand.
- Boehlje, M (1997). Industrialisation of agriculture: Implications for co-operatives. *American Cooperation*, National Council of Farmers Co-operatives Yearbook, 6-14.
- Bowersox, D. J., Closs, D. J., & Cooper, M. B. (2002). *Supply chain logistics management*. New York, NY: McGraw-Hill.
- Bowersox, D. J., Closs, D. J., & Stank, T. P. (2000). Ten mega-trends that will revolutionise supply chain logistics. *Journal of Business Logistics*, 21(2), 1-16.
- Carvalho, G. R., Carneiro, A. V. (2010). *Principais indicadores leite e derivados* [Monthly Bulletin]. Retrieved October 25, 2010, from http://www.cileite.com.br/sites/default/files/2010_10_indicadores_leite.pdf
- Caves, R. E., Petersen, B. C. (1986). Co-operatives' shares in farm industries: Organisational and policy factors. *Agribusiness*, 2(1), 1-19.
- Centro de Estudos Avançados em Economia Aplicada [CEPEA]. (2010). *Preços ao produtor* [Data file]. Retrieved August 29, 2010, from http://www.cepea.esalq.usp.br/leite/page.php?id_page=155
- Chaddad, F. R. (2007a). *The evolution of Brazilian dairy co-operatives: a life cycle approach*. Paper presented at the XLV Congresso Da Sociedade Brasileira de Economia, Administração e Sociologia Rural, Londrina, Brazil.
- Chaddad, F. R. (2007b). Cooperativas no agronegócio do leite: Mudanças organizacionais e estratégicas em resposta à globalização. *Organizações Rurais e Agroindustriais*, 9(1), 69-78.
- Chaddad, F. R. & Cook, M. L. (2004). Understanding new co-operative models: An ownership-control rights typology. *Review of Agricultural Economics*, 26(3), 348-360.
- Chen, I. J., & Paulraj, A. (2004). Towards a theory of supply chain management: the constructs and measurements. *Journal of Operations Management*, 22(2), 119-150.
- Chin, K. S., Tummala, V. M. R., Leung, J. P. F., & Tang, X. (2004). A study on supply chain management practices: The Hong Kong manufacturing perspective. *International Journal of Physical Distribution & Logistics Management*, 34(6), 505-524.

- Chopra, S., & Meindl, P. (2010). *Supply chain management: Strategy, planning, and operation* (4th ed.). Upper Saddle River, NJ: Prentice Hall.
- Coco, D. F. (2003). *Strategy pursued by international dairy processors: Implications for Fonterra*. Unpublished master's thesis, Massey University, Palmerston North, New Zealand.
- Conforte, D., Garnevaska, E., Kilgour, M., Locke, S., & Scrimgeour, F. (2008). *The key elements of success and failure in the NZ Dairy Industry* (Research. Rep. No. 313). Lincoln, New Zealand: Lincoln University, Agribusiness and Economics Research Unit.
- Cook, M. L. (1997). Organisational structure and globalisation: The case of user-oriented firms. In J. Nilsson, & G. Van Dijk (Eds.), *Strategies and structures in the agro-food industries* (pp. 77-93). Assen, The Netherlands: Van Gorcum.
- Cook, M. L. (1995). The future of U.S. agricultural co-operatives: A neo-institutional approach. *American Journal of Agricultural Economics*, 77(5), 1153-1159.
- Cooper, M. C., Lambert, D. M., & Pagh, J. D. (1997). Supply chain management: More than a new name for logistics. *The International Journal of Logistics Management*, 8(1), 1-14.
- Council of Supply Chain Management Professionals [CSCMP]. (2010). *Definitions*. Retrieved May 28, 2010, from <http://cscmp.org/aboutcscmp/definitions.asp>
- Daily, C. M., Dalton, D. R., & Cannella, A. A. (2003). Corporate governance: Decades of dialogue and data. *The Academy of Management Review*, 28(3), 371-382.
- Derocher, R. P., & Kilpatrick, J. (2000). Six supply chain lessons for the millennium. *Supply Chain Management Review*, 3(4), 34-40.
- Dias, J. C. (2006). *500 anos de leite no Brasil*. São Paulo, Brazil: Calandra editorial.
- Donlon, J. P. (1996). Maximising value in the supply chain. *Chief Executive*, 117, 54-63.
- Donoso, I. (2003). *The challenge of agricultural co-operatives internationalisation: Case studies of Fonterra and Zespri*. Unpublished master's thesis, Massey University, Palmerston North, New Zealand.
- Donoso, I., Shadbolt, N., & Bailey, W. (2004). *The internationalisation of agricultural co-operatives – A source of conflict?*. Paper presented at the 14th Annual World Forum and Symposium "Sustainable Value Creation in the Food Chain", IFAMA Conference, Montreux, Switzerland.

- Doyon, M. (2005). *Alternative co-operative structure for the agri-food sector: an exploratory study*. Paper presented at the Annual Meeting of the Canadian Agricultural Economics Society, Halifax, Canada.
- Dries, L., Dumitrashko, M., Gorton, M., Hewson, P., Ignat, A., Ignat, G., et al. (2007). *Farmer – processor relationship in the CIS dairy sector: key findings from the SIDCISA research project* [Paper]. Retrieved May 17, 2010, from www.staff.ncl.ac.uk/matthew.gorton/INTASworkingpaper20074.pdf
- Dries, L., & Swinnen, F. M. (2004). *Globalisation, quality management and vertical coordination in food chains of transition countries*. Paper presented at the 92th EAAE seminar on “Quality Management and Quality Assurance in Food Chains”, Gottingen, Germany.
- Dul, J., & Hak, T. (2008). *Case study methodology in business research*. Oxford, United Kingdom: Elsevier.
- Dwyer, F. R., Schurr, P. H., & Oh, S. (1987). Developing buyer-seller relationships. *Journal of Marketing*, 51, 11-27.
- Ellram, L. M. (1996). The use of the case study method in logistics research. *Journal of Business Logistics*, 17(2), 93-138.
- Fawcett, S. E., Ogden, J. A., Magnan, G. M., & Cooper, M. B. (2006). Organisational commitment and governance for supply chain success. *International Journal of Physical Distribution & Logistics Management*, 36(1), 22-35.
- Ferrier, A. (2004). Opportunities and challenges of the co-operative model. *University of Auckland Business Review*, 6(2), 20-27.
- Fischer, C. (2009a). The future food value chain. In A. Emerson & J. Rowarth (Eds.), *Future food farming: New Zealand Inc. Meeting tomorrow's markets* (pp. 100-102). Wellington, New Zealand: NZX Ltd.
- Fischer, C. (2009b, November 26). *Executive supply chain management*. Unpublished lecture notes, Massey University, Albany, New Zealand.
- Fischer, C., Gonzalez, M. A., Henschion, M., & Leat, P. (2007). Factors influencing trust-supporting mechanisms in European agri-food chains. *Food Economics*, 4(1), 40-49.

- Fisher, M. L. (1997). What is the right supply chain for your product?. *Harvard Business Review*, March-April, 105-116.
- Fonterra. (2010a). *Fonterra Group*. Retrieved July 16, 2010, from <http://www.fonterra.com>
- Fonterra. (2010b). *Charter for the Board of Directors*. Auckland, New Zealand: Author.
- Fonterra. (2010c). *Suppliers' Handbook 2010/2011*. Auckland, New Zealand: Author.
- Fonterra. (2010d). *Interim Report*. Auckland, New Zealand: Author.
- Frendendall, L. D., & Hill, E. (2000). *Basic of supply chain management*. Delray Beach, FL: St Lucie Press.
- Frederick, S., & Gereffi, G. (2009). *Value chain governance* [Paper]. Retrieved May 9, 2010, from http://www.cggc.duke.edu/pdfs/Frederick_Gereffi_ValueChainGovernance_USAID_BriefingPaper_Feb2009.pdf
- Freitas, M. L. (2010). O cooperativismo agropecuário no cenário político-nacional. In D. Vilela et al. (Eds.), *Estratégias e conhecimento para o fortalecimento do agronegócio do leite* (pp. 137-150). Juiz de Fora, Brazil: Embrapa Gado de Leite.
- Gall, R. G., & Schroder, B. (2006). Agricultural producer co-operatives as strategic alliances. *International Food and Agribusiness Management Review*, 9(4), 26-44.
- Garrick, D. J., Lopez-Villalobos, N., Holmes, C. W. (2001). Recent pre and post-farm gate developments in the New Zealand dairy industry. *Advances in Dairy Technology*, 13, 369-378.
- Gellynck, X., & Molnár, A. (2009). Chain governance structures: The European traditional food sector. *British Food Journal*, 111(8), 762-775.
- Gereffi, G., & Christian, M. (2010). Trade, transnational corporations and food consumption: A global value chain approach. In C. Hawkes, C. Blouin, S. Henson, N. Drager, & L. Dube (Eds.), *Trade, food, diet and health: Perspectives and policy options* (pp. 91-110). Oxford, United Kingdom: Wiley-Blackwell.
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1), 78-104.

- Gereffi, G., & Kaplinsky, R. (Eds.) (2001). *The value of value chains: Spreading the gains from globalisations*. IDS Bulletin, 32(3).
- Gereffi, G., & Korzeniewicz, M. (Eds.) (1994). *Commodity chains and global capitalism*. Westport, CT: Greenwood Press.
- Gereffi, G., & Lee, J. (2009). *A global value chain approach to food safety and quality standards*. Paper presented at the Global Health Diplomacy for Chronic Disease Prevention, Montreal, Canada.
- Gibbon, P., Bair, J., & Ponte, S. (2008). Governing global value chains: an introduction. *Economy and Society*, 37(3), 315-338.
- Gibbon, P., & Ponte, S. (2008). Global value chains: From governance to governability?. *Economy and Society*, 37(3), 365-392.
- GlobalDairy Trade [gDT]. (2010). *Questions and answers on globalDairy Trade*. Retrieved August 15, 2010, from <http://www.globaldairytrade.info/DesktopDefault.aspx?tabid=427>
- Global Value Chains [GVC]. (2010). *Concepts and tools*. Retrieved June 2, 2010, from <http://www.globalvaluechains.org/concepts.html>
- Goldberg, R. A., Porraz, J. M. (2002). *Fonterra: Taking on the dairy world*. Cambridge, MA: Harvard Business School.
- Gosh, A., Fedorowicz, J. (2008). The role of trust in supply chain governance. *Business Process Management*, 14(4), 453-470.
- Gray, D. I. (2001). *The tactical management processes used by pastoral-based dairy farmers: A multiple-case study of experts*. Unpublished doctoral dissertation, Massey University, Palmerston North, New Zealand.
- Gray, S., Heron, R. L., Stringer, C., & Tamásy, C. (2007). Competing from the edge of the global economy: The globalising world dairy industry and the emergence of Fonterra's strategic networks. *Die Erde*, 138(2), 1-21.
- Gray, S., & Heron, R. L. (2010). Globalising New Zealand: Fonterra Co-operative Group, and shaping the future. *New Zealand Geographer*, 66, 1-13.

- Healy, J. (2003). *Corporate governance and wealth creation in New Zealand*. Palmerston North, New Zealand: Dunmore Press.
- Hemme, T., & Otte, R. (2010). *Status and prospects for smallholder milk production – A global perspective*. Rome, Italy: Food and Agriculture Organization of the United Nations.
- Henehan, B. (2003). *Successfully operating in the dairy value chain* [PowerPoint slides]. Retrieved June 1, 2010, from www.citec.org/dairy_value_chain.ppt
- Hoffmann, R. (2005). Ownership structure and endogenous quality choice: co-operatives versus investor-owned firms. *Journal of Agricultural & Food Industrial Organization*, 3(8), 1-24.
- Holbert, N. B., & Speece, M. W. (1993). *Practical marketing research – An integrated global perspective*. Singapore: Prentice Hall.
- Holmstrom, B. (1999). The future of co-operatives: A corporate perspective. *The Finish Journal of Business Economics*, 4, 404-417.
- Huemer, L. (2006). Supply management: Value creation, coordination, and positioning in supply relationships. *Long Range Planning*, 39(2), 133-153.
- Instituto Brasileiro de Geografia e Estatística [IBGE]. (2010). *Pesquisa Pecuária Municipal* [Data file]. Retrieved August 27, 2010, from <http://www.sidra.ibge.gov.br/bda/acervo/acervo2.asp?e=v&p=PP&z=t&o=23>
- International Farm Comparison Network [IFCN]. (2009). *IFCN Dairy Report 2009* [Press release]. Retrieved August 7, 2010, from <http://www.ifcnnetwork.org/media/pdf/DR-2009-press-release.pdf>
- International Co-operative Association [ICA]. (2010). *Principles*. Retrieved March 2, 2010, from <http://www.ica.coop/coop/principles.html>
- Itambé. (2010). *Cooperativa Itambé*. Retrieved August 23, 2010, from <http://www.itambe.com.br>
- Itambé. (2007). *Estatuto da Cooperativa Central dos Produtores Rurais de Minas Gerais Ltda*. Belo Horizonte, Brazil: Author.
- Jagdev, H. S., & Thoben, K. D. (2001). Anatomy of enterprise collaborations. *Production Planning & Control*, 12(5), 437-451.

- J.E. Austin Associates. (2007). *Using value chain approaches in agribusiness and agriculture in Sub-Saharan Africa* [Paper]. Retrieved June 2, 2010, from <http://www.technoserve.org/assets/documents/vcguidenov12-2007.pdf>
- Kaplinsky, R., & Morris, M. (2001). *Handbook for value chain research* [Paper]. Retrieved June 2, 2010, from <http://www.globalvaluechains.org/docs/VchNov01.pdf>
- Katz, J., & Boland, M. (2002). One for all and all for one? A new generation of co-operatives emergence. *Long Range Planning*, 35(1), 73.
- Knips, V. (2005). *Developing countries and the global dairy sector: Part 1 global overview* (Working Paper No. 30). Rome, Italy: Food and Agriculture Organization of the United Nations, Animal Production and Health Division.
- Lambert, D. M., Cooper, M. C. (2000). Issues in supply chain management. *Industrial Marketing Management*, 29, 65-83.
- Lazonick, W., & O`Sullivan, M. (2000). Maximising shareholder value: a new ideology for corporate governance. *Economy and Society*, 29(1), 13-35.
- Lee, H. L., Padmanabhan, V., & Whang, S. (1997). The bullwhip effect in supply chains. *Sloan Management Review*, 38(3), 93-102.
- Lee, H. L. (2006). The triple-A supply chain. *Harvard Business Review on Supply Chain Management*, October, 87-115.
- Leedy, P. D., & Ormrod, J. E. (2001). *Practical research: planning and designing* (7th ed.). New York, NY: Macmillan Publishing.
- Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Rao, S. (2006). The impact of supply chain management practices on competitive advantage and organisational performance. *Omega*, 34(2), 107-124.
- Liker, J. K., & Choi, T. Y. (2006). Building deep supplier relationships. *Harvard Business Review on Supply Chain Management*, October, 23-47.
- Livestock Improvement Corporation, & DairyNZ. (2009). *New Zealand dairy statistics 2008-09*. Hamilton, New Zealand: LIC.

- Lowe, M., & Gereffi, G. (2009). *A value chain analysis of the U.S. beef and dairy industries*. Durham, NC: Duke University, Centre on Globalisation, Governance & Competitiveness.
- Lummus, R. R., & Vokurka, R. J. (1999). Defining supply chain management: a historical perspective and practical guidelines. *Industrial Management & Data Systems*, 99(1), 11-17.
- Lynch, G. A. (1998). *The relative advantage and disadvantage of co-operative and non co-operative business organisations*. Paper presented at the 50th Dairy Farming Annual, Massey University, Palmerston North, New Zealand.
- Martins, P. C. (2004). *Políticas públicas e mercados deprimem o resultado do sistema agroindustrial do leite*. Juiz de Fora, Brazil: Embrapa Gado de Leite.
- Maunier, P. (1984). *New Zealand's social economy: co-operatives, unions, and mutualism* (Discussion Paper No. 2). Wellington, New Zealand: Ministry of Agriculture & Fisheries Economics Division.
- Mentzer, J. T., William, D. W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, 22(2), 1-25.
- Meredith, J. (1998). Building operations management theory through case and field research. *International Journal of Operations and Production Management*, 13(5), 3-11.
- Meridian Institute. (2009). *Innovations for agricultural value chains in Africa: Applying science and technology to enhance cassava, dairy, and maize value chains* [Paper]. Retrieved May 9, 2010, from http://www.merid.org/value-chain-innovations/docs/Dairy_Value_Chain_Overview.pdf
- Ministry of Agriculture and Forestry [MAF]. (2010). *Situation and outlook for New Zealand agriculture and forestry*. Wellington, New Zealand: Author.
- Moorman, C., Deshpande, R., & Zaltman, G. (1993). Factors affecting trust in market research relationships. *Journal of Marketing*, 57, 81-101.
- Morgan, R., & Hunt, S. (1994). The commitment - trust theory of relationship marketing. *Journal of Marketing*, 58, 20-38.
- Normann, R., & Ramirez, R. (2000). From value chain to value constellation: Designing interactive strategy. *Harvard Business Review on Managing the Value Chain*, September, 185-219.
- NZX Agrifax. (2009). *Dairy report*. Wellington, New Zealand: Author.

- O'Connor, J., & Thompson, G. (2001). International trends in the structure of agricultural co-operatives. *Agribusiness Review*, 9(9) 1-16.
- Organisation for Economic Cooperation and Development [OECD] (1999). *Principles of Corporate Governance*. Paris, France: OECD.
- Olson, F., Kibbe, T. F., & Goreham, G. A. (1998). *New generation co-operative membership: How do members differ from non-members?* (Tech. Rep. No. 40). Fargo, ND: North Dakota State University, NDSU Extension Service.
- Painter, M. J. (2007). A comparison of the dairy industries in Canada and New Zealand. *Journal of International Farm Management*, 4(1), 1-20.
- Pinho, D. B. (1996). Lineamento da legislação cooperativa brasileira. *Manual de Cooperativismo*, 3, 1-15.
- Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York, NY: The Free Press.
- Porter, M. E. (2004). *Competitive advantage: Creating and sustaining superior performance* (3rd ed.). New York, NY: The Free Press.
- Power, D. (2005). Supply chain management integration and implementation: a literature review. *Supply Chain Management: An International Journal*, 10(4), 252-263.
- Rabobank. (2008). *The Brazilian dairy sector: An emerging force in global dairy exports?*. São Paulo, Brazil: Author.
- Rabobank. (2010). *Global Dairy Top-20*. Retrieved August 19, 2010, from http://www.rabobank.com/content/news/news_archive/037_Asian_companies_on_the_rise_in_Global_Dairy_Top20.jsp
- Raynaud, E., Sauvee, L., & Valceschini, E. (2005). Alignment between quality enforcement devices and governance structures in the agro-food vertical chains. *Journal of Management and Governance*, 9(1), 47-77.
- RD1. (2010). *About Us*. Retrieved August 16, 2010, from <http://www.rd1.com/corporate/about-us>
- Reid, D (2010, June). Industry reels as farmers squabble. *Dairy Exporter*, 47.

- Reynolds, P. (2006). Agriculture and forestry are vital to New Zealand's economy. In Australian Bureau of Agricultural and Resource Economics, & New Zealand Ministry of Agriculture and Forestry (Eds.), *Agricultural economies of Australia & New Zealand: past, present, and future* (pp. V). Canberra, Australia: ABARE.
- Rogers, R. T. (1997). The role of co-operatives in increasingly concentrated markets: reaction. In M. Cook, R. Torgerson, T. Sporleder, & D. Padberg (Eds.), *Co-operatives: Their importance in the future food and agricultural system* (pp. 97-101). College Station, TX: Texas A&M University.
- Rowley, J. (2002). Using case studies in research. *Management Research News*, 25(1), 16-27.
- Royer, I., & Zarlowski, P. (2001). Research design. In R. A. Thietart (Ed.), *Doing management research* (pp. 111-131). London, United Kingdom: Sage Publications.
- Royer, J. S. (1995). Potential for co-operatives involvement in vertical coordination and value-added activities. *Agribusiness*, 11(5), 473-481.
- Sadler, I. (2007). *Logistics and supply chain integration*. Thousand Oaks, CA: Sage Publications.
- Santos, K. D. (2005). *Alianças estratégicas no cooperativismo: o caso da Central Leite Nilza*. Unpublished master's thesis, Universidade Federal de Viçosa, Viçosa, Brazil.
- Schlecht, S., & Spiller, A. (2009). *Procurement strategies of the German dairy sector: Empirical evidence on contract design between dairies and their agricultural suppliers*. Paper presented at the 19th Annual World Forum and Symposium "Global Challenges, Local Solutions", IFAMA Conference, Budapest, Hungary.
- Schneeweiss, C., Zimmer, K., & Zimmermann, M. (2004). The design of contracts to coordinate operational interdependencies within the supply chain. *International Journal of Production Economics*, 92(1), 43-59.
- Seuring, S. A. (2005). Case study research in supply chains – an outline and three examples. In H. Kotzab, S. Seuring, M. Muller, & G. Reiner (Eds.), *Research methodologies in supply chain management* (pp. 235-250). Germany: Physica-Verlag.
- Seuring, S. A. (2008). Assessing the rigor of case study research in supply chain management. *Supply Chain Management: International Journal*, 13(2), 128-137.
- Sexton, R. J. (1986). Co-operatives and the forces shaping agricultural marketing. *American Journal of Agricultural Economics*, 68(5), 1167-1172.

- Shapiro, J. F. (2001). *Modelling and IT issues in supply chain integration*. Paper presented at the Workshop on Supply Chain Management Practice and Research: Status and Future Directions, University System of Maryland, Rockville, MD.
- Shleifer, A., & Vishny, R. (1997). A survey of corporate governance. *Journal of Finance*, 52, 737-783.
- Silva, E. S., Salomão, I. L., McIntyre, J. P., Guerreiro, J., Pires, M. L., Albuquerque, P. P., et al. (2003). Panorama do cooperativismo brasileiro: história, cenários e tendências. *UniRcoop*, 1(2), 75-102.
- Simchi-Levi, D., Kaminsky, P. & Simchi-Levi, E. (2000). *Designing and managing the supply chain: Concepts, strategies and case studies*. New York, NY: Irwin-McGraw-Hill.
- Spear, R. (2001). Globalisation et stratégies des co-operatives. In Les Holding (Ed.), *Coopératifs, évolution ou transformation définitive?* (pp. 115-138). France : De Boeck.
- Spekman, R. E., Spear, F., & Kamauff, J. (2002). Supply chain competency: learning as a key component. *Supply Chain Management*, 7(1), 41-55.
- Stein, M., & Voehl, F. (1998). *Macrologistics management: a catalyst for organizational change*. Boca Raton, FL: CRC Press LLC.
- Stock, J. R., & Lambert, D. M. (2001). *Strategic logistics management*. (4th ed.). New York, NY: McGraw-Hill.
- Stock, L. A., Carneiro, A. V., Carvalho, G. R., Zoccal, R., Martins, P. C., & Yamaguchi, L. C. T. (2007). *Sistemas de produção e sua representatividade na produção de leite do Brasil*. Paper presented at the Reunion Asociacion Latinoamericana de Produccion Animal, Cusco, Peru.
- Stuart, I., Mc Cutcheon, D., Handfield, R., McLachlin, R., & Samson, D. (2002). Effective case research in operations management: A process perspective. *Journal of Operations Management*, 20(5), 419-433.
- Sokol, D. D. (2009). Competition policy and comparative corporate governance of state-owned enterprises. *Brigham Young University Law Review*, 2009, 1713-1812.
- Tan, K. C. (2001). A framework of supply chain management literature. *European Journal of Purchasing & Supply Chain Management*, 7, 39-48.
- Tan, K. C., Kannan, V. R., & Handfield, R. B. (1998). Supply chain management: supplier performance and firm performance. *International Journal of Purchasing and Material Management*, 34(3), 2-9.

- Tan, K. C., Lyman, S. B., & Wisner, J. D. (2002). Supply chain management: a strategic perspective. *International Journal of Operations and Production Management*, 22(6), 614-631.
- Taylor, D. H. (2006). Strategic considerations in the development of lean agri-food supply chains: a case study of the UK pork sector. *Supply Chain Management: International Journal*, 11(3), 271-280.
- Thomas, D. J., Griffin, P. M. (1996). Coordinated supply chain management. *European Journal of Operational Research*, 94, 1-15.
- Tik, T. C. (2009). Compliance and impact of corporate governance best practice code on the financial performance of New Zealand listed companies. Unpublished doctoral dissertation, Massey University, Auckland, New Zealand.
- Towill, D. R., Childerhouse, P., & Disney, S. M. (2000). Speeding up the progress curve towards effective supply chain management. *An International Journal of Supply Chain Management*, 5(3), 122-130.
- Trechter, D., & Murray-Prior, R. (2003). Collaborative groups: themes for success and the role of universities. Paper 56, *Agribusiness Perspectives*, Agribusiness Association Australia.
- Trechter, D., & Murray-Prior, R. (2003). *Collaborative groups: themes for success and the role of universities*. Paper presented at the Agribusiness Perspectives, Agribusiness Association Australia, Brisbane, Australia.
- Tricker, B. (2009). *Corporate governance: Principles, policies, and practices*. New York, NY: Oxford University Press Inc.
- Van Dijk, G., Kyriakopoulos, K. & Nilsson, J. (1997). The future of agricultural co-operatives in the EU. In O. F. Van Bakkum, & G. Van Dijk (Eds.), *Agricultural co-operatives in the European Union: Trends and issues on the eve of the 21st century* (pp. 167-195). Assen, The Netherlands: Van Gorkum.
- Waggoner, D. B. (1994). *An exploratory investigation of New Zealand and Australian dairy co-operatives' export behaviour: a comparative approach*. Unpublished master's thesis, Massey University, Palmerston North, New Zealand.
- Webster, J. F. E. (1992). The changing role of marketing in the corporation. *Journal of Marketing*, 56, 316-325.

- Williams, P. J. (1997). *Rapport building processes used by an expert farm management consultant*. Unpublished master's thesis, Massey University, Palmerston North, New Zealand.
- Williamson, O. E. (1991). Comparative economic organisation: the analysis of discrete structural alternatives. *Administrative Science Quarterly*, 36(2), 269-296.
- Yin, R. K. (2009). *Case study research – Design and methods* (4th ed.). Los Angeles, CA: Sage Publications.
- Zhao, Y. J. (2007). *The effects of the web as a form of stakeholder communication: An empirical case study of a co-operative*. Unpublished master's thesis, University of Waikato, Hamilton, New Zealand.
- Zoccal, R., & Carneiro, A. V. (2008, October). Conjuntura atual do leite brasileiro. *Balde Branco*, 94-95.