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# Marketing Strategies of New Zealand Lamb Producers

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A thesis presented in partial fulfilment of the requirements for the degree of

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In loving memory of  
Daniel Conforte



## Abstract

The journey of many roast lamb dinners around the world originates from the green hilly paddocks of New Zealand. With the path from the farm to the final consumer becoming increasingly complex, a better understanding of the drivers of producers selling decisions is necessary to increase the efficiencies of supply chains and to enable improved value chain performance. This is particularly crucial in the New Zealand sheepmeat industry where sheep numbers have been declining and as processing companies attempt to consolidate their lamb supply through the commitment of producers to their company. A clearer understanding of the current profile of producers selling behaviour was needed to effectively move towards a more comprehensive and sustainable procurement strategy for the industry.

In order to best examine these selling decisions an initial review of literature on the marketing strategies of producers, their choice of selling channel, and the nature of their supply chain relationships was carried out. This, combined with a selection of interviews with lamb producers and industry experts, was used to formulate a survey that encompassed the marketing strategies of a purposive random sample of New Zealand lamb producers. Principal component analysis and regression partitioning modelling was used to identify the factors that explain the most variance in producers that carry out different marketing strategies. The key drivers of the different marketing strategies were examined through further analysis to identify potential mechanisms to increase the level of integration and collaboration between producers and processors.

Results conclude that producers carry out a range of marketing strategies defined by whether or not they commit to one company and secondly whether or not the producer is active or passive in their involvement in selling decisions. The most significant causes of differentiation between producers that carry out different strategies were found to be producer's values and strategic orientation. An association between the producers marketing strategy and their desire to internalise or externalise the uncertainty associated with selling decisions was found. Furthermore differences in the drivers of the marketing strategies present challenges and opportunities to influence producers selling behaviour. This research has provided the industry with a profile from the producers' point of view of why they behave the way they do. This is critical to enhance industry strategy discussion and the development of more collaborative transactions between producers and processors.



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## **Chapter One The New Zealand Sheepmeat Industry**

The overall market environment in which food is produced is changing more rapidly every decade. Regulations, consumer trends, and the nature of supply channels from producer to consumer continue to evolve. These changes have consequences for all participants involved in the supply chain and wider food industry. Producers of the primary product play a key role in the process, as this is where production begins. Producers are now faced with a number of different options for selling their products, all of which present differing levels of risk, reward, control, and collaboration with other participants in the supply chain. In general producers of livestock make selling decisions in an environment of uncertainty about future market, climatic, and production factors. The uncertainty of these factors is heightened in free-range seasonal production systems. These pressures can impact on the relationship between producers and the next step in the supply chain, whether that is a processing company or a third party livestock agent.

In New Zealand, lamb producers can choose to enter different types of committed supply programmes with a particular company or not. In a time where closer collaboration and integration of supply chains is touted as the way to better respond to changes in the market environment for food production, it is imperative to understand what is driving producers selling decisions. Greater commitment by producers to processors is seen as a way to increase supply chain collaboration and efficiencies. Therefore an examination of why producers do or do not commit is critical to provide clarification of producers decision making. The next section gives an overview of the New Zealand sheepmeat industry to provide context for the analysis conducted in this study.

This chapter introduces the general problem that is examined and addressed in this study. The chapter begins by funnelling broader issues down to the specific problem of this study. A general overview of the New Zealand sheepmeat industry is provided outlining the overall size and performance of the industry. This is followed by the statement of the problem, background and needs, the purpose and goals, and the significance of this study.

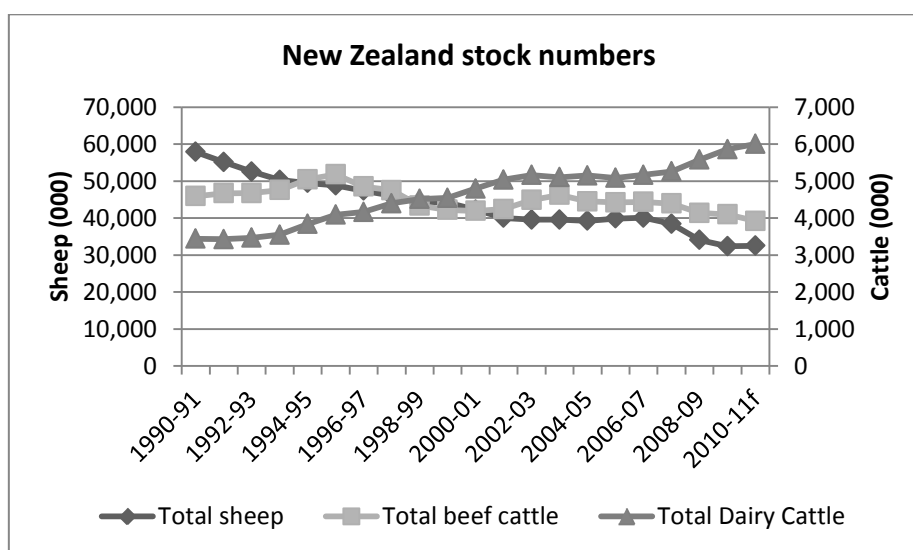
### **1. Current state of the industry**

#### **1.1 Size**

New Zealand lamb dominates the international trade of lamb around the world. While New Zealand produces only six per cent of global sheepmeat production with 350,000 tonnes per annum, over 90 per cent is exported, providing New Zealand with a 38 per cent share of total sheepmeat traded globally (Food and Agricultural Organisation, 2011). Not only does the state of the New Zealand sheepmeat industry affect global trade in this product, it is often used as an example of a free-market, export-oriented industry.

While the sheepmeat sector continues to play a dominant role in the economic well-being of the New Zealand economy, subsequent years of low profits, volatile prices, and declining production have hampered opportunities for growth. In 2010 exports of sheepmeat were worth NZD\$2.7 billion contributing 6.3 per cent of New Zealand's merchandise exports (Beef & Lamb New Zealand Economic Service, Statistics New Zealand, 2011). The introduction and removal of subsidies and other market distortions within the industry largely influenced behaviour of producers and other participants in the sector during the 1980's. Activities within the sector are now market driven with agents free to make decisions based on market signals.

The industry is currently under threat from competing land use such as dairying, dairy support, and forestry (MacLeod, 2011). Land for sheepmeat production has been substituted for dairy production and support, urban encroachment and forestry (McDermott, Saunders, Zellman, Hope, & Fisher, 2008). Pressure on lamb breeding and finishing land changes the environment in which lamb production is operating such as the number of farms now solely breeding or finishing stock. An increased number of players involved in getting the product to the market create new dynamics within the supply chain. Sheep numbers have declined since 1990, while beef cattle numbers have remained relatively constant (Figure 1.1). Over-capacity in processing space and competition by companies for stock procurement due to reduced livestock numbers has created pressure on the supply chain within the processing industry. Low sheep numbers and subsequent low production, may impact on New Zealand's ability to maintain economies of scale and market share (MacLeod, 2011).



**Figure 1.1: New Zealand stock numbers**

**Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011a**

The meat processing and exporting sector has been characterised by change, including regulatory reform, mergers and acquisitions, labour law reform and technological innovations. While four processing companies dominate production levels within the industry, there are numerous small and medium sized processors and exporters that make up the rest of the industry. The four largest companies consist of two producer-owned cooperatives (Silver Fern Farms and Alliance Group Limited), a publically listed company (AFFCO New Zealand Limited) and a privately owned company (ANZCO Foods). The four largest companies were collectively allocated just fewer than 73 per cent of the 2011 United States beef quota, and 75 per cent of the European Union sheepmeat quota. These quotas allow preferential market access to each of these markets through the reduction or elimination of tariffs. This is especially critical in European markets, where high tariff rates effectively prevent imports outside of the quota. With 228,254 tonnes carcass weight equivalent, New Zealand is allocated 80 per cent of the total tariff free sheepmeat quota for the European Union. Allocation of this quota to New Zealand meat companies is directly related to the amount of export-standard meat processed by each company. Companies are generally more focused on either sheepmeat or beef. Silver Fern Farms is the leading beef quota holder followed by ANZCO, AFFCO and Alliance Group. Alliance Group is the largest sheepmeat processors, followed by Silver Fern Farms, AFFCO and ANZCO. Other smaller processing companies and exporters predominantly

specialise in further processing or higher value products (McDermott, Saunders, Zellman, et al., 2008). Further details about some individual companies are listed below in Table 1.

There are currently around 12,700 commercial sheep and beef farms within New Zealand (Beef & Lamb New Zealand Economic Service, 2011a). A commercial sheep and beef farm is defined with at least 750 stock units of which 80 per cent of stock units being sheep and or cattle units, and at least 70 per cent of the income coming from sheep and beef operations (Beef & Lamb New Zealand Economic Service, 2011a). Farms differ in the size and scale, land type, production systems, species mix, forage types, location and environmental conditions (MacLeod, 2011). These variables “interact to create ... unique production conditions, which ... can create very complex systems that suppliers need to manage and optimise to be profitable” (MacLeod, 2011, p. 22). Farm types can be defined based on the topography and ability to finish prime stock on the land. The most common type is the breeding and finishing farms in the hill country of the North Island, which can finish varying proportions of their lambs. Lambs that are not finished on these properties are sold to lowland finishing farms that buy store stock and may have other farming operation as well such as cropping and grazing dry dairy livestock. South Island breeding finishing farms are run on a mix of land types, which can often finish a higher proportion of lambs than North Island breeders. The last farm system type is the extensive high-country merino farms in the South Island, primarily producing stock for fine wool production (McDermott, Saunders, Sinclair, Pereira, & Dowling, 2008). On any farm type the producers’ managerial and technical farming ability, preferences and attitudes, and percentage of income from off-farm sources may differ (MacLeod, 2011).

## 1.2 Performance

While the value of New Zealand sheep meat exports has been rising since 2002, this rise in value is largely attributed to increased volume as the national sheep flock has declined (Figure 1.2). There has been some increase in export prices (Figure 1.3) due to the increase in proportion of chilled and other high value cuts, however the increased volume has been mainly generated as producers decrease stock numbers due to drought, or exiting the industry due to poor returns and more profitable land use alternatives.

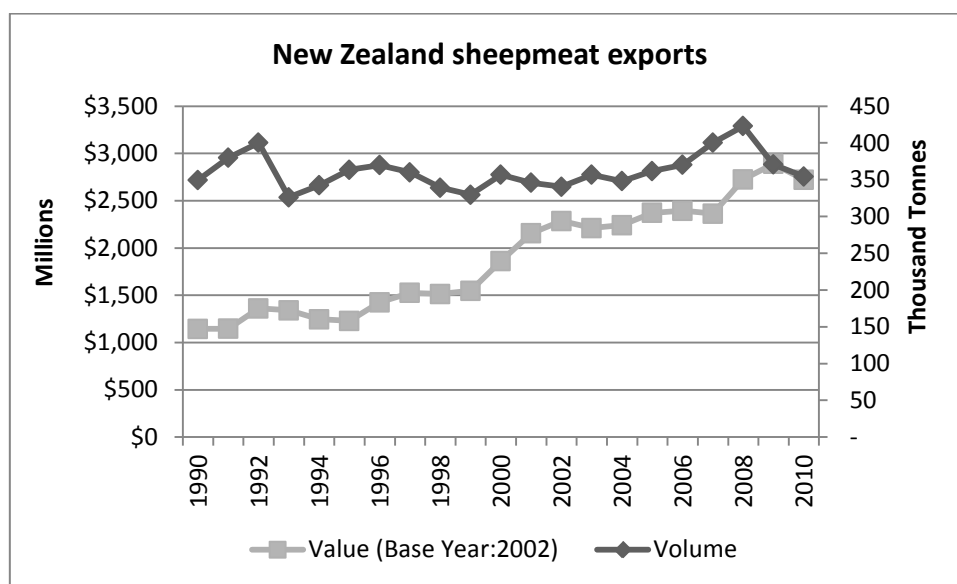


Figure 1.2: New Zealand sheepmeat exports

Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011c



**Figure 1.3: Export sheepmeat price index**

**Source: Statistics New Zealand, 2011**

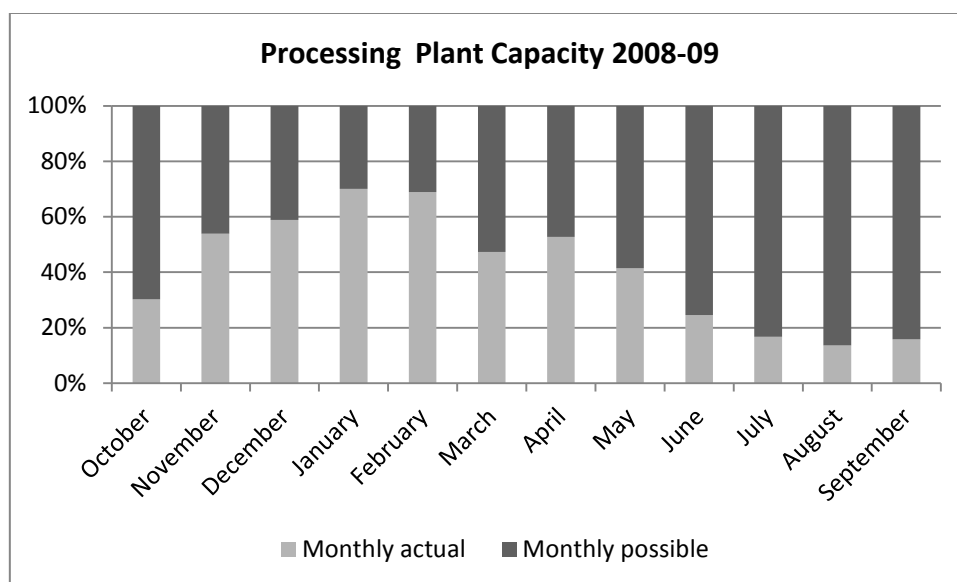
The decline in sheep numbers impacts on the economies of scale of the industry. This can have several consequences including a higher overall cost structure and limited ability to invest in innovation, but also a decrease in the ability to be able to meet customer requirements, diversify markets and develop product marketing. Depending on the industry's ability to adapt, this potential reduction could lead to two possible scenarios highlighted by a study of industry experts carried out by the Ministry of Agriculture (Ministry of Agriculture and Forestry, 2009). There may be a "Slippery slope" where "failure to address key opportunities and challenges leads to a substantial reduction in the sector's size and scope. Profits not only retain their cyclical variations, but become systemically lower.", or a "Shrink-to-fit" scenario where "the sector reduces in size, but is able to stabilise due to increased returns from reduced supply. Competitive advantages are achieved in areas such as environmental performance and the sector is able to meet exacting consumer requirements in traditional markets" (Ministry of Agriculture and Forestry, 2009, p. 14). Other potential scenarios reported included "A new market orientation" where "the sector is able to diversify into new markets and overcome the production challenges of greater year-round supply and product specification. Improved economies of scale can lead to successful processor consolidation". The last scenario described a "Knowledge industry" where "the sector makes a step-change in innovation investment, allowing for greater product and process innovation. Strategic alliances are increasingly entered into with customers, allowing greater transmission of customer requirements through the value chain. Increased capabilities and intellectual property from research and development allows for the internationalisation of the meat sector and associated industries" (Ministry of Agriculture and Forestry, 2009). The more positive scenarios involve changes from status quo behaviour and mindsets.

Since 1990, the sheepmeat industry has evolved to be market driven, efficient and highly productive (Clare, Shadbolt, & Reid, 2005). Structural changes in the processing industry have been predominantly led by regulatory changes. Increased hygiene and safety regulations from the United States and European Union in the 1960s and 1970s required plant upgrades and large capital expenditure outlays that some companies could not afford, forcing closures or takeovers (McDermott, Saunders, Zellman, et al., 2008). At the same time, Government support policies led to increasing stock numbers and the need for increased slaughtering capacity. However this trend was reversed in

the late 1980s once subsidies were removed, stock numbers began to decrease and led to an increase in competition between companies to procure stock. Some feel this has created a legacy for some processing companies of high debt levels, restricted access to working capital, reliance on third party agents, and some older processing plants that are not as efficient as they could be (MacLeod, 2011).

However in order to manage these issues, processors have invested in plant efficiency gains where possible (MacLeod, 2011). Efficiencies in many processing plants have increased with new single chain plants allowing for multiple-shifts which can be adjusted more easily in line with stock supply. Increased automated technology such as chain robotics leads to labour savings. On-farm production efficiencies have also been important to meat processing companies with producers now producing heavier leaner stock (McDermott, Saunders, Zellman, et al., 2008). This is illustrated in Figure 1.7 where average lamb carcase weights have increased 4kg between 1990 and 2010.

Many industry commentators consider that New Zealand currently has an over capacity of meat processing facilities (MacLeod, 2011). While some over capacity is necessary due to the seasonal nature of stock supply, it is considered currently excessive. The extent of the issue and the impact of the reduction in lamb numbers is summarised in Figure 1.4 where the excessive overcapacity of processing plants is highlighted.



**Figure 1.4: Processing plant capacity 2008-09.**

**Source: Compiled from data provided by (Beef & Lamb New Zealand Economic Service, 2011b)**

This over capacity largely drives procurement premiums companies offer to producers especially at the ‘shoulders’ of the main season at either side of the peak production period. This is when keeping processing chains full is most critical for efficiency and well as difficult. In contrast in peak processing months of November until April, the ease of procuring livestock reduces prices paid to producers. The necessity for procurement premiums has a direct impact on profitability when companies are paying above the actual value of the product to keep processing chains running. Returns to meat processors have followed a variable path with greater volatility in economic surplus between time periods as opposed to across companies (Evans & Grace-Webb, 2007). For the companies that do have financial data publically available there is no one company that continually outperforms another, indicating that the industry is to a large extent competitive (Evans & Grace-Webb, 2007).

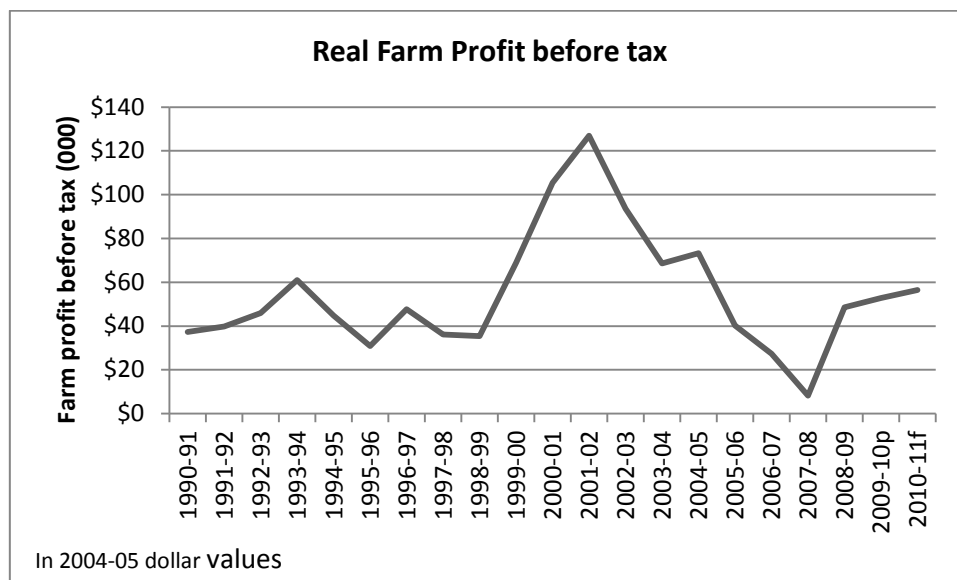
**Table 1: Meat Companies operating in the surveyed regions**

<b>Company</b>	<b>Ownership structure and Location in surveyed regions</b>	<b>2012 EU Sheepmeat quota</b>	<b>Range of supply plan arrangements</b>
<b>Silver Fern Farms</b>	Cooperative based in Dunedin. Three sheepmeat processing plants in Otago-Southland. Carried out expansion strategy into North Island beginning 2004 and now own two processing plants in the East Coast region.	52,138 (23%)	<ul style="list-style-type: none"> <li>• Schedule spot market plus premium grade payments</li> <li>• Schedule plus pool payment</li> <li>• Fixed or variable price contracts. Tighter weight and grade specifications. Minimum draft sizes</li> <li>• Producer groups linked to particular supermarket (can include feeding and breeding specifications).</li> <li>• Signal delivery dates and numbers based on previous year's supply if committing</li> </ul>
<b>Alliance</b>	Cooperative based from Invercargill. Three sheepmeat processing plants in Otago-Southland and one on the East Coast.	67,880 (30%)	<ul style="list-style-type: none"> <li>• Schedule spot market plus premium grade payments</li> <li>• Schedule plus pool payment</li> <li>• Price per head payment</li> <li>• Annual commitment programme</li> </ul>
<b>AFFCO</b>	Publically listed company primarily owned by Talley's Group. One plant on the East Coast.	28,218 (12%)	<ul style="list-style-type: none"> <li>• Schedule spot market</li> <li>• Accreditation programme with premiums</li> </ul>
<b>ANZCO (CMP)</b>	Privately owned -by Itoham Foods Inc, Nippon Suisan Kaisha Ltd and directors and management based in Christchurch. One plant located in Ashburton and one in Rangitikei.	19,806 (7%)	<ul style="list-style-type: none"> <li>• Schedule spot market plus premium grade payments</li> <li>• Fixed price contracts</li> <li>• Producer groups linked to supermarket</li> <li>• Annual commitment programme</li> </ul>
<b>Ovation</b>	Private company based in Waipukurau. Sheepmeat processing plants located in Waipukurau, Gisborne, and Feilding.	14,036 (6%)	<ul style="list-style-type: none"> <li>• Schedule spot market plus premium grade payments</li> <li>• Fixed price contracts</li> </ul>
<b>Blue Sky Meats</b>	Public unlisted company based in Invercargill. One processing plant in Invercargill.	6,466 (3%)	<ul style="list-style-type: none"> <li>• Schedule spot market</li> <li>• Fixed price contracts equal to schedule plus fixed premium varying each week.</li> <li>• Set delivery numbers and dates</li> <li>• Annual commitment programme</li> </ul>
<b>Lean Meats</b>	Farmer owned majority private company based in Hastings. Processed through plant in Hastings, and one owned in Oamaru.	5,008 (2%)	<ul style="list-style-type: none"> <li>• Schedule spot market</li> <li>• Schedule plus pool payment (only for producer group suppliers linked with customers)</li> <li>• Fixed price contracts or contract linked to schedule movements</li> <li>• Premiums for commitment and accuracy of delivery</li> </ul>

Source: Meat company websites and supplier plan prospectuses



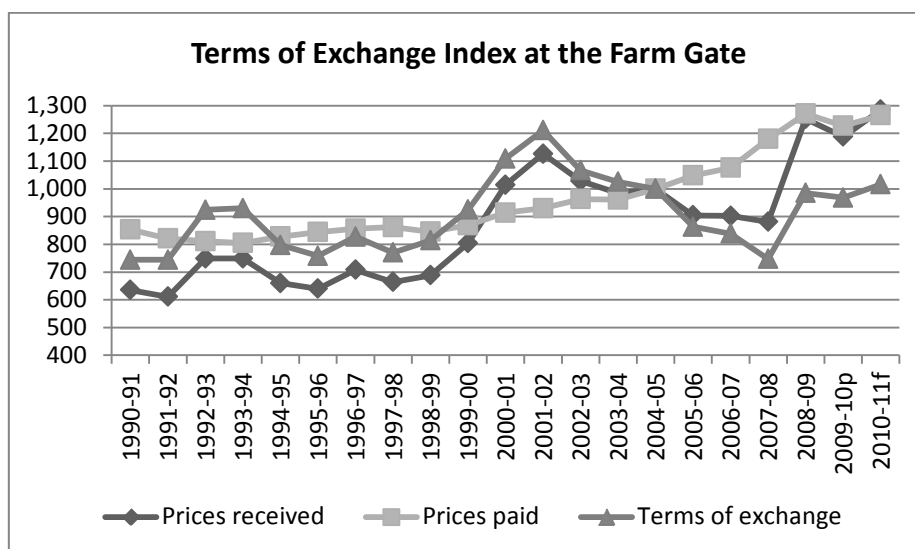
Real farm profit has been volatile and experienced several consecutive years of decline between 2001-02 and 2007-08. The level of sheep and beef returns relative to other land uses such as dairying led to a substantial change in land use especially during the mid to late 2000's. Dairy conversions and a shift to dairy support has been a large factor in the reduction in sheep and beef numbers over the last few years. Confidence in the sector has fluctuated over the last decade with producers citing weather, commodity prices and exchange rate fluctuations as having the most significant impact on farm viability over the next three to five years (Rabobank, 2010).



**Figure 1.5: Real Farm Profit before tax.**

**Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011a**

The decade from 2000 to 2010 exhibited much greater price volatility than the previous. Figure 1.6 shows the steadily increasing input prices matched by prices received increasing and then decreasing after a peak in 2001-02.

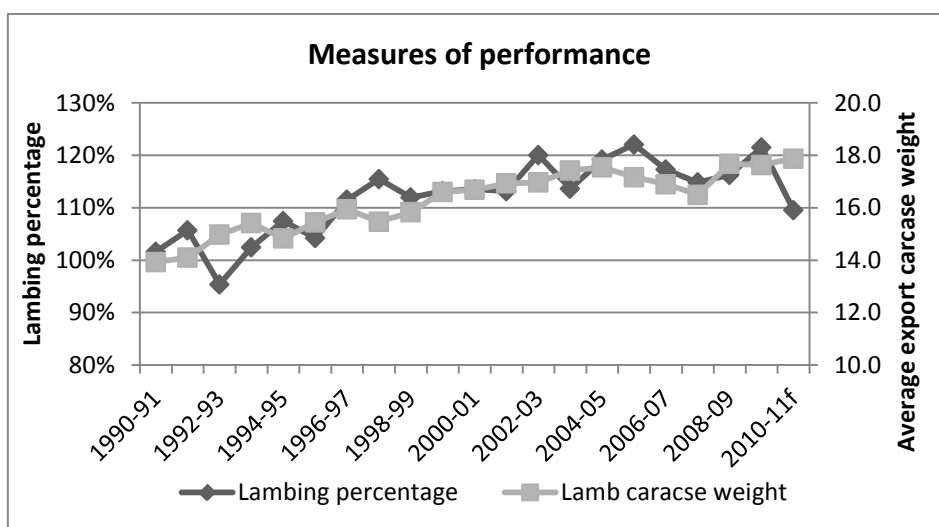


**Figure 1.6: Terms of exchange index**

**Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011a**

This decreases the terms of trade index which measures the ability of producers to pay for inputs relative to output prices. Prices have improved in the last three years; however there have still been large movements between years. McDermott, et al., (2008) conclude from previous literature that volatility in prices results in producers focusing on production systems and controllable costs. This could come at the expense of aiming to meet market specifications, as market signals are often obscured by other factors (McDermott, Saunders, Zellman, et al., 2008).

Farm management practices have advanced with increased adoption of research around pasture production and management, feeding and breeding of animals, and fecundity of breeding stock increasing the amount of final product produced per unit of input. These improvements can be seen explicitly through on-farm performance measures such as increased lambing percentages and increased carcase weights (Figure 1.7).



**Figure 1.7: Measures of performance**

**Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011a**

The report by MacLeod (2011) found from interviews with producers and other industry people that differences may exist in the performance of producers, with the “defining feature of top performers being the willingness to adopt new science and technology, trial them and adapt their business where return on investment meets their requirements” (MacLeod, 2011, p. 30). MacLeod (2011) concluded that these producers stand apart from others in that they have “developed data capture, performance monitoring and data analysis capability” (MacLeod, 2011, p. 30). Overall industry performance has improved by steady production from declining ewe numbers.

There has been a lesser rate of reduction in lamb production relative to breeding numbers. However, several consecutive years of drought has increased the rate of decline in sheep numbers, and also impacted productivity including lambing percentage, and carcase weights, causing overall lamb slaughter and production to fall to lower levels (Figure 1.8).

This section had highlighted the overall size and performance of the New Zealand sheepmeat industry over the last two decades. The next step in to examine in more detail the supply chain that producers are operating within and the types of decisions that they make when selling their lambs.

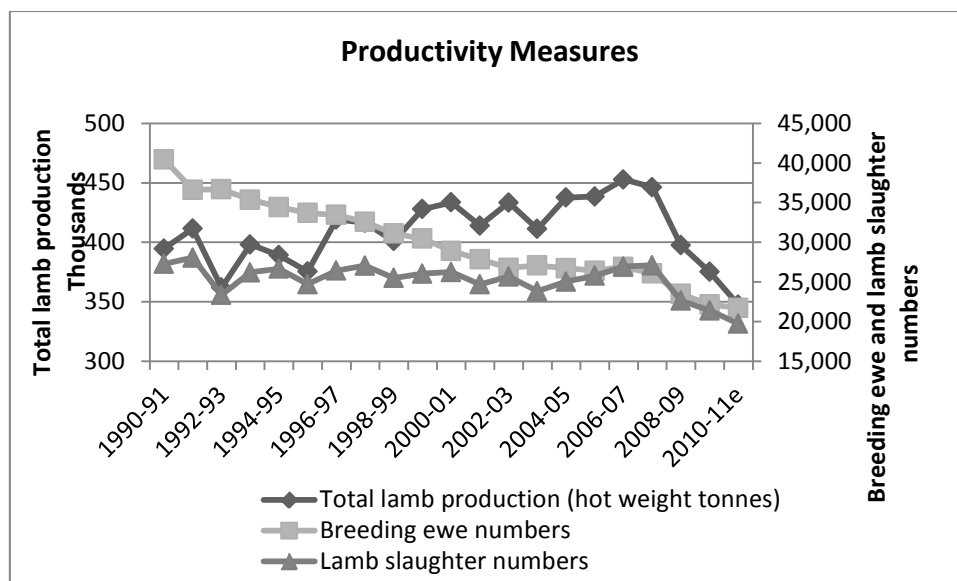


Figure 1.8: Productivity measures.

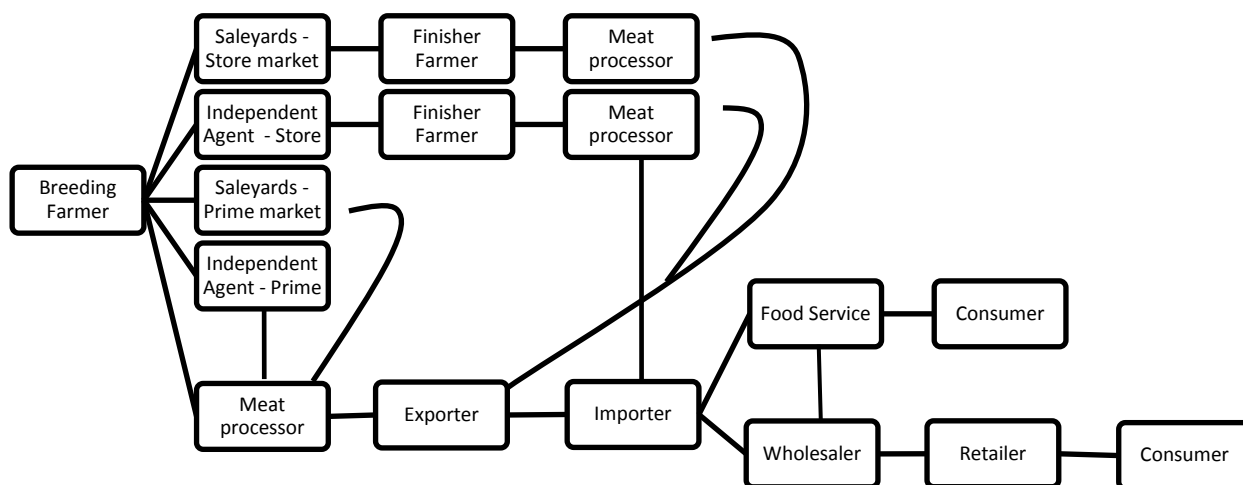
Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011a

## 2. The Supply Chain

To examine producers' transactions within the sheepmeat supply chain, wider understanding of the supply chain is needed to provide context. There are several channels that the product can take from breeding producer to consumer as illustrated in Figure 1.9. In New Zealand, lamb can be finished on the same farm and then sold directly to a processor and exported to a supermarket. Or it could pass through several intermediaries from breeding farmer, to finisher, through independent livestock agent, to processor, a different company to export it, and then several different possible channels to final consumer once imported.

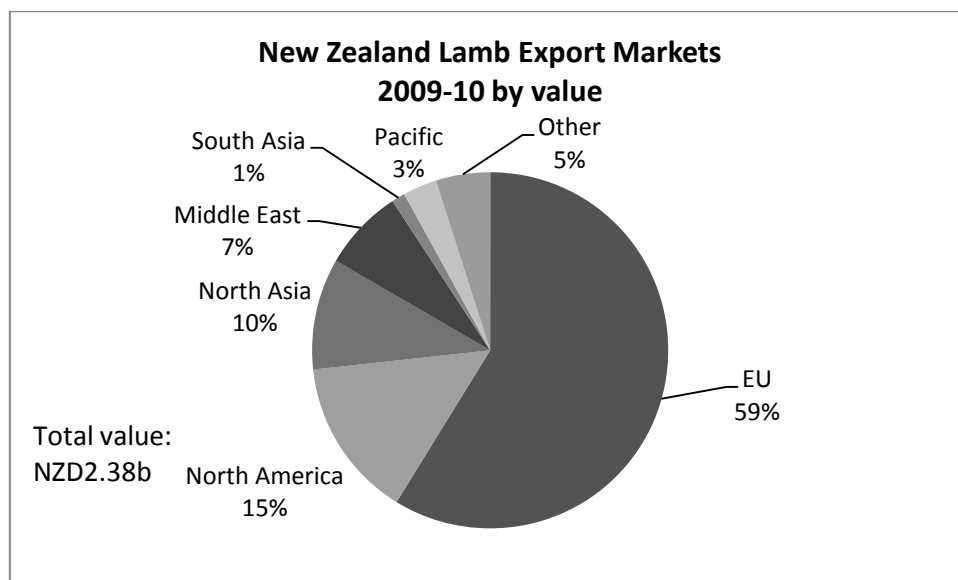
Some producers use a third party independent stock agent to sell their lambs on their behalf. Some people in the industry see this separation between producer and processor as contentious, causing a break in the flow of information down the supply chain, and limiting the commitment of producers to one processor. The Red Meat Sector Strategy Report posited that agents do have a role in the store market, in times of adverse events, and for solely working for a processing company, but not in direct competition with processing company procurement staff (MacLeod, 2011)

The sheep and beef industry structure is heavily dominated by two key factors: one being that the majority of product is exported to a variety of different markets with different product requirements; the other being that production is pasture-based and remains heavily subject to the vagaries of weather patterns throughout the year (McDermott, Saunders, Zellman, et al., 2008). These factors result in conflicting objectives, whereby meat processing companies try to meet the needs of many different markets, while producers attempt to optimise their farming systems based on personal characteristics and climatic and production challenges (McDermott, Saunders, Zellman, et al., 2008).



**Figure 1.9: Participants in the supply chain**

New Zealand has been exporting meat for over a century, during which time the range of markets and products has expanded (MacLeod, 2011). Beginning with exporting frozen lamb carcasses to the United Kingdom, New Zealand now sends different cuts and specifications of meat products to over 100 countries.



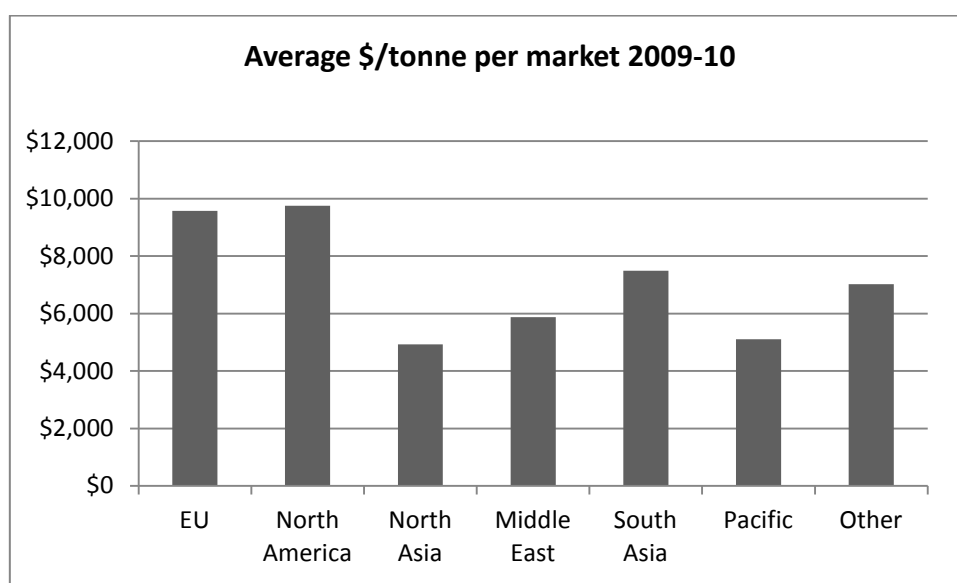
**Figure 1.10: New Zealand Lamb Export Markets.**

**Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011c**

However the main markets have remained unchanged over the last few decades with the majority of lamb destined for the UK and European market. This is influenced by the preferential trade access New Zealand has with these markets with a 228,254 tonne sheepmeat quota into the EU. These arrangements provide New Zealand with a market access advantage and increased returns above

competitors. High tariff and non-tariff barriers can be a barrier to entry into other markets for meat products and can limit the opportunities for market diversification as high tariffs reduce the per tonne return to New Zealand compared with tariff free markets.

As New Zealand's sheepmeat production reduces the quota markets make up an increasingly larger proportion of exports. In the 2009-10 season North America returned a slightly higher price per tonne for the first time, reflecting tight lamb supplies around the globe (Figure 1.11). The customers for New Zealand lamb can be broken down into those requiring 'valued-added' products for high end consumers in retail or food service, and those requiring a commodity product with little or no differential between products. Commodity market products are driven by throughput and require a competitive market approach based on lowest cost. Value added products are mostly driven by the market, requiring the supply chain to add value at every point rather than just the cost to get it to the consumer (McDermott, Saunders, Zellman, et al., 2008). Attempts have been made to add value to New Zealand meat products overseas through traceability, improved packaging, and cut size.



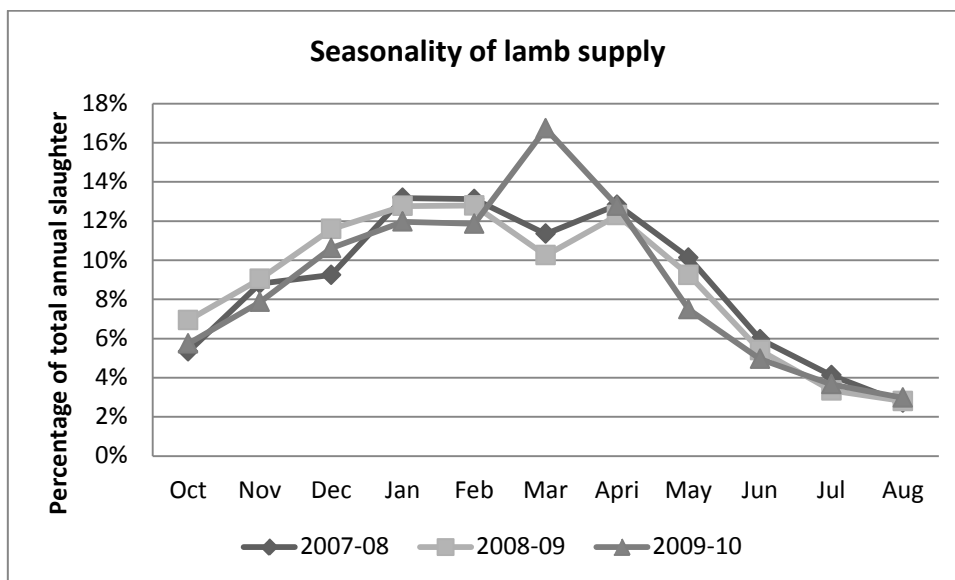
**Figure 1.11: Average \$/tonne per market 2009-10**

**Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011c**

The efficiency of the New Zealand sheepmeat industry is largely based on climatic conditions that allow for year-round pasture production. This enables the production of a low cost, natural product, providing the foundation of New Zealand's image as a global meat producer. However extensive free-range production also brings challenges with large variations possible in climatic conditions between years. Climatic conditions have a direct link to animal production and can cause large variations in timing of supply, carcass weights and fat cover (McDermott, Saunders, Zellman, et al., 2008). Given that most meat companies will have forward contracts in place to supply customers this can result in procurement premiums paid to source stock when weather conditions are favourable for growing animals to heavier weights (McDermott, Saunders, Zellman, et al., 2008). This issue is exacerbated due to the overcapacity that currently exists in the industry, creating a state of extreme competition between processors to source stock in some situations. Due to weather conditions varying between regions, this can in some cases lead to processors procuring stock from regions outside of the locality of the processing plant in order to keep plants operating.

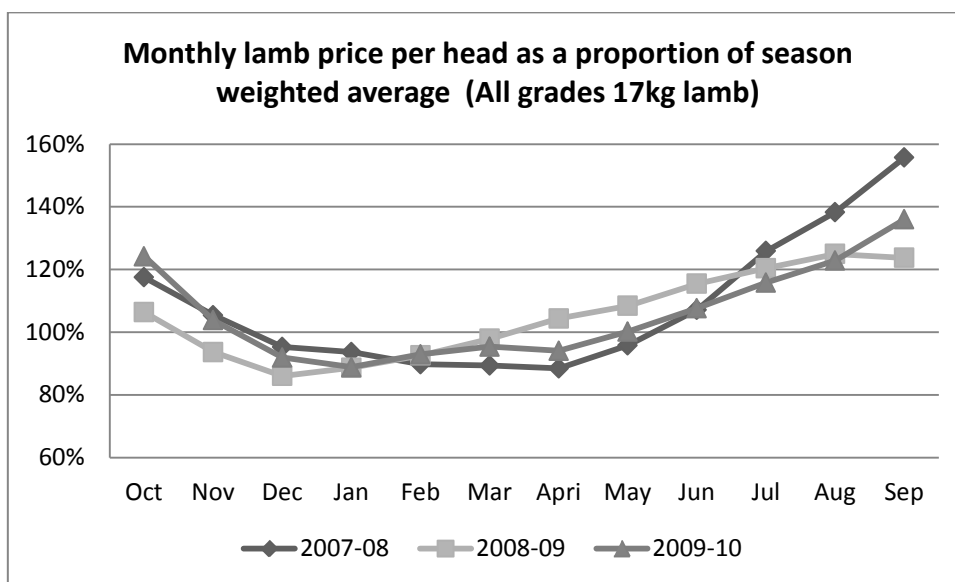
The majority of lamb production occurs over the summer-autumn period in line with normal breeding and finishing operations (Figure 1.12). Not only is the supply of lambs seasonal, creating a peak and

trough in supply throughout the year, but the timing of supply of lambs can also vary year on year depending on climatic conditions. Generally around 70 per cent of the total annual slaughter is processing in the six months from November until April. Timing and spread of supply also varies throughout the country depending on the profile of pasture growth rates of different regions. As a result, processing companies will often advertise premiums for lambs supplied at the ‘shoulders’ of the season, which occur either side of the peak. This is illustrated in Figure 1.12 where lamb prices peak as a percentage of the season’s average in the periods where supply in lamb is lowest.



**Figure 1.12: Seasonality of lamb supply**

Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011b



**Figure 1.13: All grades lamb price average \$/head 17kg lamb**

Source: Compiled from data provided by Beef & Lamb New Zealand Economic Service, 2011b

The uncertainty surrounding the timing of lamb supply and therefore prices is a key area of tension in the industry. The entire lamb supply chain is at risk of disruption each year due to weather patterns. Growth rates of pasture and lamb play a huge role in the New Zealand lamb supply chain including influencing the relationship between producers and processors, prices paid, and timing and quality of

supply. The amount and timing of rainfall over the key summer growing period is often the key predictor of the balance of power and economic fortune of producers and processors for the season.

## 2.1 Producer-processor relationship and decisions

The relationship between producers and processors varies between producers and companies. McDermott, et al., (2008) concluded from previous literature that historically the relationship has been based on trading with each party only getting in contact when they want to buy or sell stock (McDermott, Saunders, Zellman, et al., 2008). This could be down to one or a combination of factors such as the lack of a suitable platform for enhanced information transfer from market to producer (Schroeder & Hope, 2007), mistrust and adversarial nature of transactions (McDermott, Saunders, Zellman, et al., 2008), or lack of close relationship between producer and company compared with stock agent (Clare, et al., 2005).

It has been posited by MacLeod (2011) that “through building greater trust between sector participants, the sector will be able to implement a self-sustaining change process” (MacLeod, 2011, p. 7). He suggested that the sector participants need to rebalance the sectors incentives to remove anyone sector participant’s ability to profit at the expense of another. His consultation found that the differences in drivers for producers and processors created distrust, a lack of alignment and commitment amongst participants (MacLeod, 2011).

The nature of transactions between producers and processors can be seen as a consequence of the structure of the industry. Most companies release a weekly schedule of prices outlining the difference prices paid to producers differentiated by grade and weight. Price levels will often be highly reflective of the seasonal situation such as weather patterns, number of lambs born that season, and the time of year. McDermott, et al., (2008) concluded from previous literature that seasonality leads producers to prefer flexibility and opportunism, thus reinforcing spot market relationships.

The final sales decision of a producer can be affected by decisions made in the long, medium and short term. Selling decisions can be influenced by previous decisions, which may restrict the range of options available or create repercussions should the producer wish to switch selling channels. Some companies have attempted to encourage supply or fixed price contracts; however these have been often unsuccessful for a number of reasons (Ministry of Agriculture and Forestry, 2009). This is linked to the inflexibility for stock supply if weather conditions change, or due to losses incurred by either party if the market shifts away from the fixed price.

The balance of power between producers and processors will change depending on the season and the availability of grass. When conditions are favourable to producers with good growing conditions, producers tend to hold on to stock longer, forcing companies to pay premiums to source stock, however in drought conditions this situation is reversed (McDermott, Saunders, Zellman, et al., 2008). This may indicate a reason for the difference in schedule prices often experienced between the North and South Islands. In the South Island producers are unable to hold on to their trading stock going in to winter and therefore are forced to send their stock to slaughter before the end of summer. Whereas in the more mild North Island climate with a longer summer-autumn pasture growth period, the producers have more bargaining power as to when they send their stock to slaughter (Evans & Grace-Webb, 2007). Additionally South Island processing plants require greater spare capacity as the peak in production is more pronounced (McDermott, Saunders, Sinclair, et al., 2008). Some authors suggest that the long-term power lies with producers as they hold control of the supply of livestock and in general have the choice of when and to whom they sell their stock (McDermott, Saunders, Zellman, et al., 2008). Other reports suggest the need for processors to “acquire stock and manage the utilisation of plant, is forcing a tactical, short term view” (MacLeod, 2011).

Tactical decisions about when to sell will be closely related to the current feed supply and demand situation. Some producers face the decision of whether to sell lambs earlier on to the “store market” or to finish lambs to sell to processing companies as prime stock. These markets are generally aligned, although the risk of how climatic conditions will change will impact on these markets as well. The situation can change rapidly and producers will use different indicators to determine selling decisions. Producers need to react to feed deficits either by selling stock, or by bringing in supplements. Feed surpluses can be utilised either by buying in more stock, or harvesting growth as supplements to be sold or used at another time. In any case, a producer needs to constantly monitor the relationship between feed supply and demand and react accordingly.

### **2.1.1 Pricing**

While the details of payment methods for each company differ, there are some similarities in the range of options presented to producers when deciding what selling channel to choose. When selling a group of lambs, producers need to specify with the company how they wish to be paid. Generally, producers have the option to sell on to the “spot market” which is the weekly schedule price per kilogram offered by a processor. The schedule price reflects in-market pricing conditions, exchange rate changes, and procurement conditions within New Zealand. This is the least restrictive pricing plan and producers can easily switch between companies. The schedule price can differ between companies and will also reflect which weights and fat grades the company would prefer. The price per kilogram will differ based on weight and fat grade range. Producers will then be paid the price per kilogram based on the weight range and fat grade depending on how each individual lamb carcase grades.

Some companies offer the option to get paid a proportion of the market return for a producers lamb. This involves retention of 10% for example of the schedule price at time of payment, which is then returned after a period, plus a share of any increase in market returns made on the product sold. Producers may have to be shareholders of the company to partake in this option.

Producers may choose to partake in more coordinated supply programmes that are linked with a particular end customer such as a supermarket or butcher. For these programmes, producers may or may not be paid a premium. Usually there is a specified number of livestock that must be supplied and producers may be rewarded for delivering to pre-specified supply numbers. Producers may be required to specify in advance how many lambs they will commit in the season, and which months or weeks these lambs are expected to be ready to process. Producers may receive premiums for delivering lambs that meet certain weight and fat grade specifications. Certain programmes may have breeding or feeding requirements.

Producers can opt to have their stock priced on the property at either a fixed per head price, or per kilogram live-weight price. This method transfers the risk of how the carcase will grade from the producer to the processor. Additionally premiums may be offered to producers on top of normal pricing options. These premiums reflect an increased need for livestock in the following week and will be communicated through the published schedule or through contact with meat company representatives. Premiums are predominantly offered to attract livestock at the shoulders of the season when processing efficiency is lowest, or to target certain markets such as the Christmas or Easter trade. For some companies, these premiums may be more frequently available for larger clients, or those with a longer supply history with the company.

### **2.1.2 Delivery**

Producers have the option to commit in advance their predicted lamb supply numbers to a company and estimated times that they will be ready to be slaughtered. Producers then confirm and book



processing spaces about a week before lambs are due to be slaughtered. These arrangements are usually conducted through either a meat company livestock representative or an independent third party stock agent who will liaise with different companies on behalf of the producer. Signalling commitment to one company provides producers with increased certainty of processing space, and this is considered important especially in periods of drought when processing space can become limited.

Commitment arrangements between producers and processors are generally on a casual basis, and indicate an intention of best effort on both the producer and processor sides to deliver to the agreement. Generally there is a level of flexibility on both sides acknowledging the seasonal and climatic difficulties that can arise and limit either side's ability to fulfil agreements. There are very seldom penalties for failure to fulfil commitments. Penalties may include a loss of premiums for either a certain line of lambs, or for the whole season, or reduced preferential access to processing space at other times. Some companies offer commitment rewards in a price per head, if a producer commits and delivers all their stock to the company for a whole season (which may increase the more number of years a producer remains committed).

Meat companies generally hold supplier meeting at the start of the season where they will advise producers of the outlook for the market, what marketing programmes they are running, and the procurement plans that will be available to producers in the coming year. Any concerns producers have about the services or strategy can be raised at these meetings.

Meat companies are increasingly offering store stock services to those producers who are not able to finish stock to prime condition. Several companies offer services linking lamb breeders with lamb finishers. Some companies will purchase store stock at a live-weight price and then pay to have them finished either on the same property or a different property for a price per kilogram of live-weight gain. This can offer benefits of guaranteed income to producers while also creating a secure source of supply for the company in times when livestock supply is tight.

There are generally low levels of interdependency between producers and meat processors. Producers have a perceived ability to switch easily from one processing company to another, as well as to deal with different livestock agents (Clare, et al., 2005). In most locations there are at least 2-3 different processing companies within selling distance of a producer. However, one area of interdependency is the issue of processing space. There are some periods of the year when processing space is limited due to either peak supply periods, or due to adverse weather events such as drought. In these times, producers value access to processing space to reduce feed demand on their farm, and to process lambs before they become overweight. One method of increasing access to processing space in these periods is to commit lambs to one company. Another method is through having a positive relationship with a lamb buyer, either a meat company representative or a third party stock agent. Conversely processors are dependent on producers to supply lambs at periods when lamb supply is low. This can be encouraged through commitment arrangements, and establishing a positive relationship with producers. A collaborative relationship with producers may lead to increased information sharing and an increased supply of lambs that meet market specifications and that are supplied in periods of low supply.

New Zealand has some of the highest standards and latest innovation in grading systems which assists to reduce any risk to producers of not being paid for quality and allows for efficient premium or discount payments based on grading. Market information is delivered to producers through regular market reports or supplier updates emailed or sent out to producers providing a summary of the outlook for market conditions for each livestock class. However perception gaps have been shown to

exist between buyers and suppliers in terms of information sharing, with suppliers believing there is a higher level of information sharing than buyers (Clare, et al., 2005).

This section has examined the overall situation in which the research will be carried out. The next section provides justification of the research and explores in more depth some of the key factors that need to be considered in the research.

### **3. Justification of Research**

#### **3.1 Problem statement**

The challenge for the New Zealand sheepmeat industry to remain competitive and to respond to the changing market environment can be separated into three key components. Firstly there is a lack of understanding within the industry about what drives New Zealand lamb producers selling decisions and behaviour. Similar to any business, producers make selling and marketing decisions in relation to their overall business strategy, goals and activities. Currently producers are seen to be carrying out different selling behaviour and there is a desire within parts of the industry to alter or move away from certain selling practices. This is for the ostensible goal of benefiting the entire sheepmeat industry through increased supply chain efficiencies and value chain performance.

Secondly there is a lack of clarity on how best to achieve more integrated supply chain transactions between producers and processor. Supply programmes are being created by processing companies to further enhance collaboration and commitment of producers to processors and in some cases these programmes are having limited uptake by producers. These programmes require a producer to commit an annual supply of lambs to one processor, and will differ in the level of delivery and price specifications. Processors desire greater commitment by producers to their company in order to secure a supply of livestock and in some cases a guarantee of lamb production quality. The existence of third party stock agents is seen by some in the industry as detrimental to increased collaboration between producers and processors.

Lastly the seasonal and uncertain nature of lamb production and the myopic tendencies of producers (and in many cases processors) is seen to foster adversarial relationships between these two parties. A lack of trust is thought to exist between many producers and processors which may prohibit a long term industry strategy from being developed. In this respect historical grievances may be limiting the ability of some participants to move forward. These issues need to be addressed and rectified to enable closer collaboration and success in the future.

#### **3.2 Background and need**

This section provides further background into the key components of the problem statement and the need for research in this area. Previous research has examined the issues of the New Zealand sheepmeat industry and where changes need to occur (KPMG, 2011; MacLeod, 2011; McDermott, Saunders, Zellman, et al., 2008; Ministry of Agriculture and Forestry, 2009), yet little research has looked into the issues highlighted in the problem statement of what drives producers decisions and behaviour, what would encourage increased and enhanced producer commitment to a processor, and what influences the quality of relationships between producers and processors. This gap in understanding will limit the potential success of future industry-wide and company specific strategies that try to change producer behaviour. The current nature of the New Zealand lamb supply chain and behaviour of producer and processor participants is examined in the next section.

### 3.2.1 Collaboration and commitment

The reason for choosing between different price and delivery options is the key focus of this study, particularly the decision to commit lambs to one company. Industry reports have suggested that “while the sector is not broken, it is not currently operating as efficiently and effectively as it could” (MacLeod, 2011, p. 17). Conflict arises as processors need to procure stock for plant utilisation in the short term, and pay high prices to do so, whilst also benefiting from long term commitment from producers (MacLeod, 2011; Ministry of Agriculture and Forestry, 2009). The Red Meat Sector Strategy Report is the most recent report and aimed to identify ways in which profitability of the red meat sector can be increased, sustainably, and reinvestment in the industry promoted (MacLeod, 2011).

Closer collaboration between producers and processors is seen as necessary to increase the competitiveness of the sheepmeat supply chain, through increased commitment, long-term relationships and contracts (MacLeod, 2011; McDermott, Saunders, Sinclair, et al., 2008; McDermott, Saunders, Zellman, et al., 2008; Ministry of Agriculture and Forestry, 2009). Decreasing costs and increasing efficiencies and productivity have been the drivers of industry competitiveness in the past, and while it is suggested that there is still room for productivity improvements for some producers and processors, there is also a need to create more value in the end-product by responding to consumer trends (MacLeod, 2011; Ministry of Agriculture and Forestry, 2009). The relationship between producers and processors can have a role to play here, as some consumers desire an increased connection with the production and properties of their food (Ministry of Agriculture and Forestry, 2009).

The Ministry of Agricultural and Forestry report (2009) found through surveys that 87 per cent of sector participants saw the culture of the sector as the major constraint to future success. The competitive nature of procurement leads to an adversarial culture. This culture could be leading to less than optimal levels of collaboration in innovation and in response to market requirements (Ministry of Agriculture and Forestry, 2009, p. 28). The report highlights that farmer’s desire for short-term price maximisation results in predominance of spot market relationships between producers and processors. Furthermore, the report suggests that producers seem reluctant to commit, either due to responding to incentives such as higher spot market prices, or due to cultural constraints such as mistrust between producers and processors.

MacLeod (2011) suggested increased use of contracts as a solution for the problems in the industry, presumably to increase trust and the possibility of reward for loyalty. Other authors suggest closer collaboration would allow more alignment and connection across the value chain potentially creating greater value and higher returns, and driving the industry to become more competitive in the future (KPMG, 2011; Ministry of Agriculture and Forestry, 2009).

One of the three core strategy themes in the Red Meat Sector Strategy Report was efficient and aligned procurement. Activities for this theme included shifting the focus of competition from the farm gate to offshore competitors, ensuring suppliers received fair and sustainable reward for their performance, and increased transparency (MacLeod, 2011). The report identifies that an estimated 75 per cent of producers commit their lambs to one company, which illustrates a “very high level of loyalty across the sector”, but cites issues with the 25 per cent who do not commit. The report suggests if producers can they should contract at fixed prices, enabling processors to use financial instruments to manage exposure to currency (MacLeod, 2011). Increased contractual supply is touted to lead to reduced price volatility, increased trust, less power abuse, better plant utilisation, and better product marketing (MacLeod, 2011).

Others in the industry do not necessarily see contracting as the sole solution, but that producers and processors need to signal a greater level of commitment to each other (KPMG, 2011). Rather than contracts providing the solution, producers need “to pick their processor based on the company’s strategy, a belief that they will do the best job in maximising value for them, the desire to have an ownership interest (or not), or any of a hundred other reasons, and work out how they can support that processor and in turn how the processor can help them improve their business” (KPMG, 2011, p. 25).

Based on the reports (KPMG, 2011; MacLeod, 2011; McDermott, Saunders, Sinclair, et al., 2008; McDermott, Saunders, Zellman, et al., 2008; Ministry of Agriculture and Forestry, 2009) it seems that there are two concurrent tracks of thought related to the need for increased collaboration and commitment between producers and processors. The first track pursues the need for greater plant efficiency achieved through committed supply arrangements between producers and processors. This would entail producers committing a large proportion of their stock to one company, including the provision of estimated numbers and dates for processing. This would ostensibly allow processing plants to run more efficiently, and reduce the need for procurement premiums, thus increasing profits and potentially the returns to producers. In reality, it is likely that procurement will still remain an issue in the shoulders of the season. If full commitment were successful in securing producers supply at similar times of the year as currently supplied, all that is likely to happen is that returns would be more evenly distributed over the year, with less of a peak in prices in the shoulder seasons, and less of a trough in the peak season. This would result in any benefits of commitment being distributed to those that produce lambs in the peak season.

The other path relates to adding increased value along the supply chain by meeting consumer requirements for product specifications, greater traceability and a link to the origin of their food products. This is already occurring in small sections of the red meat industry in New Zealand, where producer groups are linked in with specific supermarket or retail marketing schemes. This would seem to involve a greater level of collaboration than purely committing livestock to one company, and would entail greater sharing of information, closer relationships between the producer and processor, and working together to better meet customer requirements such as product specifications and traceability.

These two tracks both hinge on the idea that is primarily the producer whose behaviour needs to change. Interestingly however, there is some acknowledgement that producers are simply responding to the incentives they are given regarding procurement premiums and adversarial behaviour by processors as well (Ministry of Agriculture and Forestry, 2009). No research has looked into the prospective value that could be generated either through increased returns from the market if more collaborative relationships are created, or the potential increases in efficiencies and returns if processors are provided with an increase in committed supply. There is also no evidence thus far to suggest that there is a difference in relationship quality between producers and processors, or indeed product quality, to be achieved through increased collaboration and commitment. In contrast, it seems that there are already a high proportion of producers ostensibly committing their livestock to a company, which may suggest that factors other than the level of commitment are having an impact on selling behaviour. It could be that while producers are seemingly committing livestock, other factors result in a lower than anticipated level of eventual commitment leading to tension between producers and processors. Or it could be that the producers who do not commit at all are the leading cause of tension in the sector because they are able to benefit most from procurement premiums and flexibility in supply.

The New Zealand meat industry has struggled through several years of low confidence and low returns, which has decreased livestock numbers and production. The industry has illustrated an ability

to be adaptive and innovative, yet issues around leadership, and historical grievances seem to be dampening the drive for future prosperity. Further analysis is needed to determine whether the call for increased collaboration and commitment rests solely on industry political ideals, or whether there is actual value available to be captured through better relationships between producers and processors, and increased coordination and commitment of supply.

Previous reports and research highlighted the need to try and change producer behaviour to achieve increased integration and coordination of the supply chain. Limited reference has been made to the nature of the relationships between producers and processors in previous research. Therefore there remained a need to investigate from a producer perspective the nature of the industry, and the drivers of their decisions and behaviour.

### 3.3 Purpose and objectives of the study

The purpose of this study was to investigate New Zealand lamb producers selling behaviour and the reasons for their behaviour. This can be achieved through the creation of a profile of the range of decisions and behaviour made by producers. A better understanding is needed to enhance decisions and strategy of the processing companies, producers and the wider industry. Currently little consideration is given to the drivers of producers selling decisions when attempting to change behaviour or engage with producers for increased integration and coordination of the supply chain. A wide ranging survey of New Zealand lamb producers selling decisions and behaviour was needed to ascertain what different marketing strategies exist and what the main influencers of decisions are.

As a result, industry stakeholders will be empowered to establish why producers behave in the way they do and how behaviour can most effectively be influenced or changed. Processing companies will be able to better respond to producers' different marketing strategies. This entails creating supply plan programmes that better meet the needs of certain producers and attracting lamb supply from the producers they wish to be in partnership with. This may increase overall collaboration within the industry through improved relationships and more integrated and coordinated supply chains.

The main objective of this research is to contribute to the knowledge and understanding of the state of the New Zealand sheepmeat industry by creating a profile of lamb producers selling decisions. More specifically the research aims to profile the types of selling behaviour carried out by producers, including main influencers of selling decisions; reasons producers do and do not enter into more committed supply chains and ways in which behaviour could be changed; and the role relationships currently play in the supply chain and whether these relationships can increase further collaboration and commitment.

### 3.4 Research questions

In order to fulfil the purpose and objective, the following questions were developed.

1. What are the current marketing strategies used by New Zealand lamb producers?
  - 1.1. What are the features of different lamb selling options that drive selling behaviour?
2. What are possible means by which the industry could increase collaboration and commitment of producers to one processing company?
  - 2.1. What are the primary reasons producers select the marketing strategies they currently do over other options?
  - 2.2. What, if any, are the prominent differences in the types of producers that choose to use the different marketing strategies?
  - 2.3. What are the different influencers of decisions and behaviour between the groups?

- 2.4. What factors unique to the New Zealand lamb industry could encourage or hinder more collaboration and commitment between producers and processors?
3. What role do relationships between producers and processors play in producers selling decisions?
  - 3.1. With whom do producers consider to be their main selling relationship?
  - 3.2. What is the current nature of this relationship?
  - 3.3. How could these relationships be used to increase collaboration and commitment in the lamb industry?

This chapter has outlined the background and problem that has led to the creation of this research topic. The need for the research and the contribution the research aimed to make has been outlined. This was followed by the defining of the purpose, objectives and specific research questions for this research. This framework guides the subsequent chapters, initially by determining the topics examined in previous literature in the following chapter.

## Chapter Two Literature Review

### 1. Introduction

The previous chapter outlined the general problem, background and objectives of this research. The research problem is driven the attempts to change producers' behaviour in relation to supply chain decisions. In order to do this a greater understanding is needed of what drives producers businesses, the differences in supply chain options and what producers prefer, and the nature of supply chain relationships and the role these relationships have in the supply chain transaction. Previous theoretical and empirical literature on these topics is outlined in this chapter and how this literature is useful in developing a framework to analysis New Zealand lamb producers selling decisions.

The first section examines previous clustering of producers based on differences in business and marketing strategies. This is useful to develop a profile of the different types of strategies used by producers, why these differences exist, and what may be important in trying to influence producers' behaviour. The marketing behaviour of firms is explored, including grouping firms based on strategic orientation relating to competitive advantage. This theory is then explored through empirical studies of producers and differences in strategic orientation of producers are investigated (Boger, 2001; Davies, Eddison, Cullinane, & Kirk, 1999; Isengildina & Hudson, 2001; McLeay, Martin, & Zwart, 1996; Poole, 2000; Schulze & Schlecht, 2009; Tsourgiannis, Eddison, & Warren, 2008).

The second section analyses producers' decision-making in relation to supply chain option. Several different methodologies are used to interpret reasons for producers' behaviour. An evaluation of these approaches is useful to develop a comprehensive in-depth analysis of why producers behave the way they do, what they value when making selling decisions, and what external factors may be compelling behaviour. From a different series of literature, the concept of transaction cost economics is introduced and how this theory posits to explain the nature of transactions between two parties in a supply chain. A range of empirical studies are then explored to test different theories in relation to the producer-processor transaction and the producer's choice of selling channel (Boger, 2001; Ferto & Szabo, 2002; Gillespie, Basarir, & Schupp, 2004; Hobbs, 1997; McLeay & Zwart, 1998; Woldie & Nuppenau, 2009). The next section explores product marketing theory and how the concept of consumers' product choice could be applied to the choice of supply channel (Hobbs, 1996; McDermott, Lovatt, & Koslow, 2004; Stanford, et al., 1999) . The adoption of new behaviours is covered in relation to producers through the innovation diffusion and complementarities theories (Darnhofer, Schneeberger, & Freyer, 2005; Fairweather, 1999; James, Klein, & Sykuta, 2007, 2011). Finally in this section of the literature review, some studies that have looked at analysing the searching and buying behaviour of producers are reviewed in terms of how these decisions may correlate with selling decisions (Bunn, 1993; Diekmann, Loibl, & Batte, 2009; Feeney, Berardi, & Steiger, 2011; Gloy & Akridge, 1999; Gunderson, Boehlje, & Gray, 2005; Kool, Meulenberg, & Broens, 1997).

The literature review concludes by highlighting the role that the nature of relationships can play in influencing producers selling decisions and the level of collaboration within the supply chain. This is necessary to identify the role that relationships play within supply chain selling decisions and what factors affect the nature of these relationships. Empirical studies of drivers of relationship quality are investigated (Clare, et al., 2005; Fischer, Gonzalez, Henchion, & Leat, 2007; Fischer, et al., 2008; Ivens, 2004; James & Sykuta, 2006; Kwon & Suh, 2004; Matopoulos, Vlachopoulou, Manthou, & Manos, 2007; Morgan, Strong, & McGuinness, 2003; Schulze & Schlecht, 2009; Schulze & Spiller, 2006 Theuvsen & Franz, 2007).

## 2. Marketing Strategies of Firms

Theory and managerial implications about marketing strategy of firms has evolved over the decades. Marketing strategies of firms generally align with overall business strategy and are part of a firms quest for long-term competitive and consumer advantage (Wind & Robertson, 1983). Strategies have evolved from being more production focused to more customer and market focused as consumers have become more discerning and global competition has increased (Trienekens & Beulens, 2001). Production orientation strategy focused on mass production that evolved to increased quality and product attributes becoming more important. Strategy then evolved to selling orientation with increased advertising and a push to sell “at all costs.” This then became a marketing orientation where products were developed and marketed for targeted customers, to customer orientation where the need to determine and satisfy certain customer needs became more apparent. Then a market orientation that focused on competitor activities and organisational coordination as well as the customer, to relationship management where firms aim to identify capture and retain profitable customers. A customer-centric orientation emerged where customisation and understanding the wants, needs and resources of individual customers was most important, and finally to a service orientation aiming to create additional value for targeted customers (Kaur & Sharma, 2009; Trienekens & Beulens, 2001).

While within any one industry, there can be all types of strategies followed; it is industry leaders that will adopt the latest strategies in order to gain competitive advantage. Porter (1980) proposed that ‘the essence of strategy is relating a company to its environment’. An important part of that environment is the stakeholders or customers. Primary producers often do not deal directly with end customers and instead deal with buyers. These are a key stakeholder for producers, and therefore should play an important role in the producer’s strategy.

Strategic group studies attempt to classify and identify firms that follow similar strategies. Members of strategic groups make similar decisions based on key variables with strategic behaviour varying from group to group. Porter (1980) classified a firms marketing strategy into Differentiation, Cost leadership or Focus. Differentiation involves designing a product to appeal to buyers interested in more than just price. Cost leadership aims at producing a low-cost standardised product. Focus aims at fulfilling needs of certain market segment by either cost leadership or differentiation. This classification scheme is based on whether a firm follows a product uniqueness versus low cost orientation or targets industry wide markets or specialist markets (Porter, 1980). Any of the three strategies can be effective, based on the resources available to the firm, the firm’s distinct capabilities, and non-controllable environmental factors. Therefore, it is likely that producers are able to successfully carry out different types of strategies based on their own resources, capabilities and environmental factors.

Another strategy classification is Miles, et al., (1978) who created typologies based on structures and managerial processes. The typologies are Prospectors, Defenders, Analysers, and Reactors. Prospectors have a proactive stance to the competitive environment and are entrepreneurial in marketing. Defenders maintain a stable position and aim to protect and secure market share through better service and lower prices. Analysers are a hybrid of the first two and tentatively explore and develop new products or market opportunities while maintaining security in current operations. Reactors lack any clear strategy and only respond to competitive circumstances (Miles, Snow, Meyer, & Coleman Jr, 1978). Factors that affect which strategy a firm follows include the firm’s production process orientation, marketing capabilities, quality orientation, price-cost leadership, product scope and development and level of differentiation. The Resource-based view is a more recent theory that



suggests that the strategy of the firm is dependent upon the resources that a firm has access to and the capacity a firm has to coordinate these set of resources to perform tasks (Morgan, Strong, & McGuinness, 2003).

### **3. Marketing Strategy of Producers**

The development of typologies of business strategies have also been applied directly to producers. This is particularly more relevant in recent times as producers have increased ability to begin to adopt a range of different business strategies. However, a slightly different approach needs to be taken given the unique environment in which producers operate. Some argue that the nature of primary commodity goods defined by their level of standardisation can limit the ability of agricultural producers to differentiate their products (Davies, et al., 1999). Differentiation infers making a product more attractive to a particular target market, and creating a difference in product offering from competitors. This difference can be based on quality, functional features, promotion, or differences in availability. Therefore there are certain ways in which livestock producers can potentially differentiate their products. This may be through consistency of high carcase quality, scale of supply, or targeting certain times of the year to supply. While the small scale and fragmented nature of farming enterprises can impede the development of economics of scale required for overall cost leadership (Davies, et al., 1999), some producers are able to use scale and extensiveness to produce at lower costs relative to other producers.

McLeay, et al. (1996) identified a gap in the literature in relation to describing the marketing activities of individual producers. The agricultural marketing literature did not describe the marketing activities of individual producers adequately. Strategic marketing behaviour of producers is often assumed to be relatively homogenous. The farm management literature often simplifies or ignores marketing behaviour, primarily focusing on the production management decisions, with selling decisions a secondary consideration. McLeay, et al. (1996) analysed farm business marketing and strategic management processes and found that differences exist between groups of producers. Since then several other studies have analysed producers' strategic orientation in several industries and locations (Davies, et al., 1999; Isengildina & Hudson, 2001; Poole, 2000; Tsourgiannis, et al., 2008). In addition, some analysed the impact of strategy on the choice of marketing channel (Davies, et al., 1999; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008).

#### **3.1 Factors that impact strategy and behaviour**

In identifying strategic groups, different strategic variables need to be identified to differentiate and group individuals. Sets of strategic constructs or factors group strategic variables together. Individual results are subjected to cluster analysis with the aim of grouping individuals with similar patterns of behaviour into categories. Differences in behaviour or beliefs such as focus on production versus marketing or cost or levels of flexibility in operations define strategic factors. Producers indicate their level of agreement with a number of statements via Likert scales which then gives an overall score for each factor. In one study data was collected as binary variables whereby the producer fell into one of two categories for each question (Poole, 2000).

McLeay, et al. (1996) decided on 12 strategic constructs including differentiation, production focus, market knowledge, market flexibility, low cost focus, financial focus, stability, production flexibility, and short-term returns focus. Davies (1998) identified seven constructs of market knowledge, production planning, consumer and buyer orientation, channel flexibility, cost focus, differentiation, and quality and traceability focus. The two are identical in the constructs looking at production, market, and channel flexibility factors. McLeay, et al. (1996) includes financial factors namely

financial focus, off-farm financial focus, financial imperative, and a construct on short-term returns, which are not covered in Davies (1998). Attention to quality and traceability is not explicitly covered by McLeay, et al. (1996), presumably because traceability is not as important for crop producers as for livestock producers.

Differentiation construct relates to growing niche and trial crops, being involved with further processing and value-added activities, and being involved in off-farm marketing (Davies, et al., 1999; McLeay, et al., 1996). Production focus relates to the level of monitoring crops while growing, continually updating production techniques, using specialist techniques to maximise crop yields, aware of crop costs and returns, and maximising farm profits is the most important farm goal (Davies, et al., 1999; McLeay, et al., 1996). Sales flexibility identifies whether the producers sells crops on free market rather than contract, whether producer stores crops to sell when price highest, and whether monitor market signals to plan sales decisions (McLeay, et al., 1996). The stability construct identifies the extent the producer plans crop mix to minimise risk, stability of crop mix, and meeting of long-term market requirements (McLeay, et al., 1996). Financial imperative assessed whether or not the producer could afford to store crops and wait for prices to improve (McLeay, et al., 1996).

Financial focus assessed how the producer perceived the farm gate as boundary of business, whether viewed farm business with a financial focus, how financially secure they were, and the feeling of influence on the price received. A short-term returns focus attempts to maximise short-term returns, use specialist techniques to gain quality premiums and maximise yields, and aware of crop costs and returns (McLeay, et al., 1996).

Production flexibility identifies the extent of flexibility in product, whether the producer regularly changes the crop mix, and how much the producer plans production by monitoring a number of market signals (McLeay, et al., 1996). Market knowledge measures the extent producers feel they understand market requirements and distribution channels, awareness of new crops and crop varieties, monitoring of market signals and whether they simultaneously plan production and sales activities (Davies, et al., 1999; McLeay, et al., 1996). Market flexibility construct measures flexibility of market outlets rather than method or timing of sales, whether they deal with many outlets, are continuously seeking new outlets, and are aware of different returns from selling to different outlets. Low cost focus measures level of input costs, and concern with budgeting and planning (Davies, et al., 1999; McLeay, et al., 1996).

Commercial sensitivity construct assess whether producers keep knowledge from other producers, grows crops on trial basis, sell crops on the free market and whether they monitor market prices. Off-farm financial focus relates to whether producers invest money off farm rather than on-farm, farm in a relatively unconstrained manner and have easy access to capital prepared to invest off-farm (McLeay, et al., 1996). Quality and traceability focus assessed whether the producer tried to increase farm business success by producing quality livestock sold by formal or informal contracts, and whether traceability is essential to farm business (Davies, et al., 1999).

Poole (2000) proposed that three sets of factors are likely to influence producers' production and marketing decisions. These are the resource set of the producers, the external opportunities and constraints, and thirdly the personal attitudes, aptitudes and attributes of the producer. The resource set consists of factors of production such as land and labour; quality, quantity and choice of inputs including technology and agrochemicals; climatic conditions of rainfall and temperature; and production systems such as scale, diversification and level of technology.

External opportunities and threats consist of product characteristics such as seasonality and variability and potential for diversification; physical infrastructure; policy incentives and constraints such as

taxation and support creating or limiting commercial opportunities; and organisations, institutions and market conditions, which may affect decision-making response time. The organisations, institutions and market conditions will include things such as the characteristics and drivers of buyers and the different channel options available.

Personal factors are fundamental to the response to resource endowment and the external environment. These include the level of wealth and diversity of income sources, risk management and cooperative tendencies, level of management skill, and knowledge and experimental learning determine individual entrepreneurship (Poole, 2000).

These three sets of factors were not explicitly considered in any of the other studies investigating producer's strategies. However, it is important to recognise factors other than just the activities and tendencies of the producer will influence their marketing strategy. Whether a producer is more or less production or market focused, whether they develop niche products, sell to many or few market outlets, or is flexible in the timing of sales will be very dependent on the physical and institutional environment in which the producer operates. The availability of different market outlet options will have a significant influence on the behaviour of the producers. While there will be some producers who may look to develop their own market outlet option, most producers will select from currently available outlet options.

The objective of Poole's (2000) study was to ascertain whether the Spanish citrus industry was only comprised of two sectors; one that is modern, innovative, and efficient and the other larger section made up of smaller less advanced producers. Secondly, to find out whether the modern production sector is characterised by progressive business strategies compared to the less advanced sector. The cluster analysis only used production and marketing characteristics whose interrelationships were statistically significant. Factors investigated related to the resource set including whether or not citrus production was the principal economic activity of the producer, diversification through area planted in other crops, and the scale of production (more or less than 50,000kg). The level of innovation captured personal attributes and was judged by whether the producer had replanted or re-grafted any variety after 1990, whether or not they sold to a cooperative (which is traditionally viewed as a residual market) and whether they were aware of destination market. Institutions and market conditions available were assessed by whether or not the producer sold to more than one buyer and whether the producer felt they could exercise bargaining power to achieve a better price.

Tsourgiannis et al. (2008) profiled the factors that affect the marketing channel rather than overall strategy of sheep-milk producers in Greece. However, these factors are similar to those used in other studies and included production orientation, cost focus, profit orientation, differentiation and interpersonal relationships. Interpersonal relationships related to keeping knowledge producers have from other producers, and seeing other producers as main competitors, similar to McLeay et al. (1996).

Boger (2001) used multivariate techniques to cluster 200 Polish pork producers based solely on their behaviour related to marketing. Factors included investment in specific assets, ability to safeguard assets, degree of coordination with buyer, use of grading and written contracts and extent of bargaining power. The study outlines different marketing channels that currently exist in Poland, but the reasons why some channels are used, compared to others, are not determined. Moreover, this cluster analysis was secondary to the primary research of investigating the choice of producers marketing arrangements between large processors as opposed to local slaughterhouses and traders. Therefore, a multinomial logit data set, rather than Likert scales as in other studies, provided data for the cluster analysis. Producers were grouped based on marketing factors such price received compared to average; type of contractual arrangement (spot market, oral contract, formal written

contract); and producers perceived ability to negotiate price (scale 1: always accept price to 5: always negotiate price). Post transaction factors were also accounted for such grading system used (none, weight class or EUROP standards) and final average weight of hogs sold. Lastly the extent of investment in hog production since 1990 (scale from 1: no investment to 6: high investment) was considered.

Schulze and Schlecht (2009) carried out a cluster analysis with the aim to provide analysis into the ability for cooperative livestock traders to increase the loyalty of suppliers. Therefore the analysis looked to investigate how satisfied producers currently were with traders, how important price was overall and how flexible they liked to be. The sample covered pork and beef producers in Germany to assess their attitudes towards their relationship with their cooperative livestock trader. The study used a Likert scale to measure each factor. Price orientation assessed the producer's belief that if the price is satisfactory, the type of buyer does not matter. Price satisfaction assessed whether producers realised better prices by marketing via a livestock trader. Desire for flexibility measured how much the producer wants to remain flexible regarding the choice of business partner.

When analysing the use of different marketing channels by United States cotton producers, Isengildina and Hudson (2001) also profiled producers based on factors that affect marketing channel rather than wider management strategy. The study grouped factors into three categories of characteristics of producers and the farm, alternative use of risk-reduction techniques, and non-economic factors such as producer preferences. Characteristics of the producer and farm include level of education, level of risk aversion, size of farm, and debt levels. Alternative risk-reduction techniques include off-farm income, participating in government commodity programmes, and purchasing crop insurance. Producer attitudes towards the different marketing options were analysed through questions on the belief that certain options will provide higher returns or reduce risk and feelings towards the difficulty or otherwise of using different marketing options.

There were some similarities and differences in choice of variable between studies. The inclusion of variables measuring the producer's market or selling orientation, their production orientation and their level of differentiation were the most common (Davies, et al., 1999; McLeay, et al., 1996; Tsourgiannis, et al., 2008). The producer's desire for flexibility or stability was considered in three studies (Davies, et al., 1999; McLeay, et al., 1996; Schulze & Schlecht, 2009), as were variables on financial or cost focus (McLeay, et al., 1996; Tsourgiannis, et al., 2008). Two studies clustered producers based on producers' resource set such as land and education levels, and the personal attitudes and preferences of the producer (Isengildina & Hudson, 2001; Poole, 2000). Two studies looked at the producer's level of competition with other producers (McLeay, et al., 1996; Tsourgiannis, et al., 2008). Boger (2001) clustered producers on a different set of variables to other studies including price received, investments made on-farm, type of contract used, bargaining power, grading system used and average livestock carcase weight. Schulze and Schlecht (2009) also considered different variables of the relative price orientation and price satisfaction of producers.

McLeay, et al., (1996) considered the largest range of variables, and since then subsequent studies have refined the number of constructs used to cluster producers. Variables investigated ranged from the characteristics of the farm and producer, the environment a producer operates in, to the preferences and attitudes of the producer. The differences in these variables illustrate the decision that needs to be made when determining what factors are used to define the clusters. While it seems useful that the producer's preferences and attitudes are used to define the clusters, and then the characteristics and other external factors can be used to describe the clusters, as was done in McLeay et al., (1996) and Davies, et al., (1999), this process can be shortened by clustering on all variables simultaneously.

### 3.2 Farm strategy clusters

Only a certain proportion of producers will have a more market-oriented focus with some preferring to carry out a production focused strategy (McLeay, et al., 1996). One of the first studies to identify differences in marketing strategies grouped arable producers in New Zealand into five clusters based on a number of different strategic variables. The identified marketing strategy clusters were Production/Production Flexibility, Stability, Production/Market Outlet, Differentiation and Arbitrage (McLeay, et al., 1996). Production/Production Flexibility strategy contained 20 per cent of the sample and had a high level of production flexibility, production focus, market knowledge, and low costs. Stability strategy group was the largest with 32 per cent, with a high focus on stability and financial aspects, and low focus on flexibility. Production/Market Outlet focus strategy covered 21 per cent of the sample and has a strong focus on production but an inflexible crop mix and high degree of channel flexibility by selling to a large number of outlets. Differentiation strategy was the smallest group with 9 per cent of the sample, who were more likely to grow niche crops and be involved further down the supply chain. Arbitrage strategy contains 18 per cent of sample and has high sales flexibility, and a focus on short-term gains rather than production concerns.

A following study grouped South West England beef producers into three clusters of Buyer Orientation, Selling Orientation, and Differentiation (Davies, et al., 1999). Buyer orientation contained 43 per cent of sample and had strong channel flexibility, quality and traceability, cost focus and market knowledge, but low differentiation and consumer orientation. Selling orientation also accounted for 43 per cent of sample with a focus on consumer and buyer orientation and production planning, but low focus on what the market needs, such as market knowledge and quality and traceability. Differentiation accounts for 14.5 per cent of sample with an overwhelming focus on differentiation, but all other constructs were important such as market knowledge and channel flexibility, apart from the quality and traceability factor. These three clusters do not seem to give a clear representation of the different types of producers, as the dominant variables don't seem to accurately reflect different strategies. The difference between the clusters especially the buying and selling orientation is not well defined.

The study of Spanish citrus growers grouped 300 producers into five clusters by the multivariate interdependency technique (Poole, 2000). The study found certain producers to be active, commercially oriented marketers while others were passive marketers depending on their views of their ability to negotiate price, whether or not they entered negotiations with more than one buyer, their level of awareness of destination markets and whether or not they sold to a cooperative (Poole, 2000). In contrast to McLeay et al. (1996), producers' marketing strategies seemed unrelated to production characteristics. There seemed to be no link between production quality and marketing proficiency. While this could in part be due to McLeay et al. (1996) not explicitly including resource set or external opportunities and constraints in their cluster variate, the difference in scale between producers was the only factor used by Poole (2000) not investigated by McLeay et al. (1996). The Spanish citrus industry is quite different to the New Zealand sheepmeat industry as it has much smaller scale production, fragmented plots, a high degree of part time agriculture and lower focuses on quality.

A four-cluster solution was developed in Boger (2001). The first group was labelled Non-investors and was characterised by low levels of cooperation with the buyer, producers had little bargaining power and most transactions took place on the spot market. Weight classes dominate grading, producers did not make large investments in production facilities, and these producers received the lowest average prices. The second group labelled High investors had a similar pattern to the first, but had made a high level of investments. It was expected that with a high investment, producers would

want to safeguard assets and use more formal contracting but these producers still used the spot market, and were therefore vulnerable to price fluctuations. The third group were labelled Contractors who produce high quality, contracted production with low bargaining power. A relatively high level of producer bargaining power distinguishes the fourth group labelled Bargainers. These producers have a higher ability to negotiate, have oral contracts, and receive the highest prices. The Bargainers that receive highest prices illustrate the importance of informal trading relationships based on bargaining power.

In Schulze and Schlecht (2009) eight clusters were formed, with three clusters having no desire for flexibility, while the other five want flexibility but for different reasons. Two clusters are price oriented, four were not price oriented, and two are neutral. Two clusters were not convinced of monetary advantages of livestock dealers, and two have neutral positions with price satisfaction. The clusters were then assessed in terms of actual loyalty to marketing cooperatives (percentage of stock sold through cooperatives), and satisfaction with or desire for extra services provided by traders (Schulze & Schlecht, 2009).

The clusters that were formed in each of the studies were reflective of the types of constructs used in the analysis. The studies that used similar constructs of strategic orientation generally had similar clusters (Davies, et al., 1999; McLeay, et al., 1996). Those that used different types of constructs, had a different focus for the clusters such as the producers level of active or passive marketing behaviour (Poole, 2000), or level of investment and bargaining power (Boger, 2001). This illustrates that it is crucial to ensure that the constructs used accurately represent the behaviour and preferences of producers. It seems that it is possible to cluster producers on any number of variables, and subsequently determine groups of producers that may or may not represent the differences in behaviour in reality. It would seem better to cluster producers simultaneously on behaviour and attitudes rather than just one or the other.

### **3.3 Producer and farm characteristics**

The different characteristics of producers that made up groups from cluster analyses were often analysed. These include age, education level, farming experience, and involvement in off-farm activities. Farm business characteristics included farm area, herd size, enterprise mix, the number of agents or outlets product is sold through, debt levels, and off-farm income (Davies, et al., 1999; McLeay, et al., 1996; Poole, 2000; Tsourgiannis, et al., 2008).

Age and farming experience were considered a factor in determining strategy in some studies (McLeay, et al., 1996) but not in others (Davies, et al., 1999), while education level was important in both studies. The Stability strategy in McLeay et al.(1996) were significantly older and had spent more year farming than others while Differentiation and Arbitrage strategy spent more time at tertiary institutions. Davies et al (1999) also found that Differentiators were the most highly educated. The financial situation in relation to debt servicing as a proportion of income does not appear to impact strategy (Davies, et al., 1999; McLeay, et al., 1996). Involvement in off-farm activities such as position of an industry board or involvement with activities further down the supply chain did have an effect on strategy (Davies, et al., 1999; McLeay, et al., 1996). McLeay et al. (1996) found that Differentiators and Arbitrators spend more time away from the farm either in part-time employment or on positions of responsibility in other organisations. Davies et al. (1999) also found Differentiators more likely to be involved in off-farm positions in farm or on-farm organisations. Farm characteristics such as farm area and herd size did influence strategy (Davies, et al., 1999; McLeay, et al., 1996; Tsourgiannis, et al., 2008). Producers following Differentiation strategy have largest farm

area (Davies, et al., 1999; McLeay, et al., 1996), followed by Production focus/Production Flexibility strategy.

Importance placed on, and sources of, information, the number of agents producers used and the crop mix or proportion of total income the enterprise contributed were other factors that differed based on marketing strategy (Davies, et al., 1999; McLeay, et al., 1996; Tsourgiannis, et al., 2008). Significant inter-cluster differences between the perceived importance of overseas newspapers and magazines, agents, producer group meetings, crop field days, farm workers, personal records, farm advisors and rural shows or exhibitions were found (McLeay, et al., 1996). Differentiation strategy producers found all information sources to be more valuable than Stability producers did. Farm records and farm budgets were more important to Buyers and Differentiators than Sellers (Davies, et al., 1999). Producers following a Production/Market outlet focus sold to more outlets than other strategic groups, and Differentiators grew more different types of non-traditional crops than others did (McLeay, et al., 1996).

Tsourgiannis et al (2008) found that many characteristics did not differ between groups, but this could be due to the similar characteristic of the sample and population of sheep and goat producers in a region of east Macedonia in Greece. A similar result occurred in the study of marketing strategies of Spanish citrus producers (Poole, 2000).

One study looked at whether certain marketing strategy groups were more likely to produce carcasses to requirements sought by livestock processors (Davies, et al., 1999). Those with a Buyer focus were more likely to produce a higher proportion of high quality carcasses. Differentiators were more likely to produce average quality consistently, and Sellers more likely to produce carcasses of unknown grading that only meet minimum market requirements (Davies, et al., 1999).

By grouping producers based on transactional factors such as price received, type of contract and grading system used, Boger (2001) characterised the different types of marketing channel solutions as much the different types of producers. Boger (2001) mixed the characteristics of different selling solutions with that of producer characteristics. Boger (2001) does not characterise the make-up of the different groups in terms of age, education, farm size as other studies do. However Boger (2001) does point out that the Bargainers did include 16 agricultural enterprises (just over half of the agricultural enterprises interviewed) who are former state-owned enterprises and cooperatives compared with individual producers, so are assumed to be of larger size.

### **3.4 Summary of producers marketing strategies**

The studies analysed have shown that marketing strategies do make up an important component of farm business strategies (Davies, et al., 1999; Isengildina & Hudson, 2001; McLeay, et al., 1996; Poole, 2000; Tsourgiannis, et al., 2008). The importance of marketing within a strategy differs depending on the overall business strategy of the farm and the orientation towards production, the market, risk, and flexibility. A factor that has not been extensively covered in the studies is the diversity of marketing channel options available and the potential for producers to cater to them. The studies generally compared two to four different options without in-depth explanation of the attributes associated with each option. If the market is homogenous or producers have no technological resources to respond to alternatives, then marketing is likely to become less relevant.

The studies illustrate the importance of deciding on constructs to use when determining clusters. While several areas can be analysed including strategic orientation, selling behaviour, preferences and attitudes of the producer, and the environment in which the transaction is carried out, it is important to decide which constructs best reflect the reality of the situation and the areas that differentiates

producers. It would seem beneficial to cluster on selling behaviour plus attitudes, and demographics at the same time, rather than just behaviour and strategic orientation, or just behaviour and demographics. Selling behaviour is intrinsically linked to the other variables in some cases. It seems necessary to develop an objective measure of producer performance and decision-making ability. This would seem to be a critical element of any producer's strategic orientation. While this was attempted in some of the literature, the concept was not explicitly mentioned or widely developed. The goal of this research is to identify differences in producer behaviour and why they do it. This is a step further than simply identifying differences in producers' strategic orientation or demographics. Selling behaviour is the key dependent variable, and the most important independent variable needed is how to influence this behaviour.

Importantly the studies highlight that not all producers follow the same homogenous marketing strategy and that marketing strategies do involve more than just the timing and method of sales (Davies, et al., 1999; Isengildina & Hudson, 2001; McLeay, et al., 1996; Poole, 2000; Tsourgiannis, et al., 2008). While studies have investigated New Zealand crop producer behaviour, and other the behaviour of livestock producers, there has not yet been a cluster analysis carried out on New Zealand lamb producers (Davies, et al., 1999; McLeay, et al., 1996). This would add to the research particularly given the free-market environment that New Zealand producers operate in compared to other livestock producers. New Zealand producers operate in a unique situation in which the majority of produce is exported to many different markets around the world and is based on seasonal free range production.

#### **4. Producers choice of supply chain integration**

The next section examines previous literature on what factors influence a producer's choice of supply channel option. This covers theoretical and empirical studies. The first topic is transaction cost economics whereby the theory is introduced and then empirical tests are reviewed. Additional studies have attempted to decipher producers selling behaviour through relationships with their strategic orientation, values, demographics and elements of the channel. Subsequently different types of theory used to assess producers' decision making is examined and whether these concepts could be applied to a producers selling decisions.

Research has attempted to identify the factors that affect the decisions made by producers in relation to marketing. Attempts have been made to measure the effect of the transaction costs associated with each selling option (Boger, 2001; Ferto & Szabo, 2002; Gong, Parton, Cox, & Zhou, 2006; Hobbs, 1997; Woldie & Nuppenau, 2009); the impact of characteristics of the producer and their overall strategy (Gillespie, et al., 2004; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008; Wachenheim, deHillerin, & Dumler, 2001); and other external or solution attributes that may impact decision-making (Blandon, Henson, & Islam, 2009; Gillespie, et al., 2004; Gong, et al., 2006; Key, 2005; Popp & Parsch, 1998; Stringer, Sang, & Croppenstedt, 2009; Wachenheim, et al., 2001). Additionally new frameworks such as conjoint analysis and innovation diffusion have been used to try and explain producers' decision making process relating to supply channels. Literature introducing these concepts to primary industry supply chain decisions was reviewed (Darnhofer, et al., 2005; Fairweather, 1999; Hobbs, 1996; James, et al., 2011; McDermott, et al., 2004; Sahin, 2006; Stanford, et al., 1999). The concept of a producers searching and buying decision making process was reviewed to examine whether similar ideas can be applied to the producers selling decisions (Bunn, 1993; Diekmann, et al., 2009; Feeney, et al., 2011; Gloy & Akridge, 1999; Gunderson, et al., 2005; Kool, et al., 1997).



## 4.1 Transaction cost economics theory

The transaction cost approach is the most widely used theoretical framework to analyse vertical coordination within supply chains, including the meat supply chain (Theuvsen & Franz, 2007). Transaction costs are costs associated with dealing with other parties. Theory proposes that the degree of 'vertical coordination between different stages of a production, processing and distribution chain will be carried out in the most transaction-cost-efficient manner' (Hobbs, 1997, p. 2). The higher the transaction costs, the more likely vertical coordination will occur through alliances, contracts or vertically integrated firms (Hobbs & Young, 2000). The dominant role of spot markets results in studies primarily differentiating costs of transaction exchanges for the spot market versus other more integrated types of transaction (Theuvsen & Franz, 2007).

Traditional neoclassical economic theory implicitly assumes transaction costs to be minimised, and when modelling economic behaviour they are assumed to be zero. The transaction involves the exchange of a homogenous product, with no quality variations and hence no costs in measuring quality. If product attributes are different, they are treated as separate products serving different markets. Perfect information is assumed, and therefore agents can act in full knowledge of quality, price, and competition (Hobbs, 1996). In transaction cost economic, the theory focuses on the existence of firms and the nature of business transactions (Hobbs, 1996). Not only do exchanges between partners incur costs, they may play a role in determining the most efficient level of vertical coordination. Costs of transactions can increase or decrease over time, and will lead to changes in the possible most efficient nature of supply chain organisation (Hobbs, 1996).

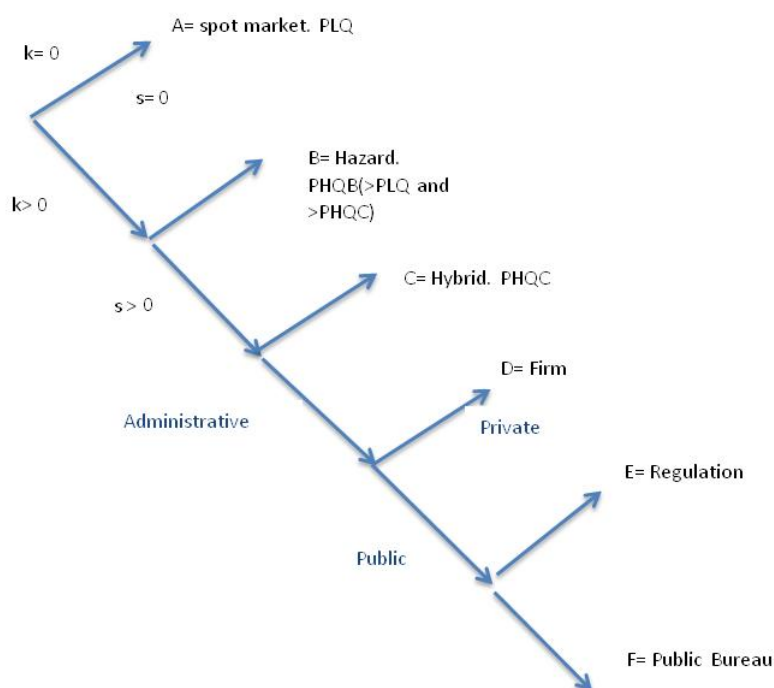
Transaction costs arise due to asymmetric information, bounded rationality and opportunism (Hobbs & Young, 2000). Two key human behaviour attributes assumed in economic theory are the 'cognitive ability and the self-interestedness of human actors' (Williamson, 1998, p. 30). Cognitive ability refers to the paradigm of bounded rationality in which actors will behave as rationally as possible, often being limited by certain factors (Williamson, 1998). Self-interestedness can be described in relation to transaction costs as opportunism (Williamson, 1998). In transactions between two parties, the existence of information asymmetry and misalignments of incentives create agency costs. These are similar to transaction costs but focus more on the specific transaction between two individuals, and whether one party (the Principal) can rely on the other party (the Agent) to carry out actions in a way which does not disadvantage the Principal (Kuwornu, Kuiper, Pennings, & Meulenber, 2005).

In practice, costs of transaction can be classified as ex-ante such as information and search costs, during transaction such as negotiation, or post-transaction costs of monitoring and enforcement. Information costs include the cost of obtaining price and product information or the costs of identifying suitable trading partners. Negotiation costs are the costs of carrying out the transaction and may include commission fees, costs of negotiating terms of exchange, transport costs, or the cost of formally writing contracts. Monitoring costs cover anything to do with ensuring the terms of transaction are adhered to by the other party (Hobbs, 1997). It is generally agreed in theory that higher levels of uncertainty about quality, quantity, and price and the existence of asset specific investments (whereby one party may need to make significant investments in production processes) increases the level of vertical coordination (Hobbs & Young, 2000).

Boger (2001) presents a theoretical model of marketing evolution based on a framework that identifies the driving forces behind market evolution and vertical coordination. The framework sets out the interrelationships between four aspects of Polish hog transactions: quality and its measurement (grading), prices, specific investments and level of vertical co-ordination (governance). This framework encompasses transaction costs by showing that hog quality improvements can only be

achieved when prices give real incentives for quality-specific investments and when safeguarding mechanisms prevent opportunistic behaviour. Grading and price-premiums encourage quality-specific investments in hog production that can be defined as asset-specific investments (Boger, 2001). The quality of product influences the nature of the transaction and thus the transaction costs. Over time as markets mature homogenous quality standards are adopted and transaction costs are reduced.

The model based on Williamson's (1998) extended contracting model allocates modes of governance based on the level of asset specificity (Figure 2.1). In the case of no asset specific investment  $K=0$ , the spot market is the most efficient mechanism for coordinating transactions. Once  $K>0$ , investments become specific to the particular transacting party, creating a bilateral dependence. The level of safeguarding mechanism is denoted by  $S$ , and where  $S=0$  there is risk of opportunistic behaviour. At node B, there is a risk premium paid through  $PHQB$ , because there is no safeguard offered. Safeguards can take the form of contracts, or long-term relationships known as hybrids at node C. Other governance nodes include intra-firm solution (vertical integration of farmers into processing), regulation, and public bureau.



**Figure 2.1: The extended contracting scheme.**

**Source: Williamson (1998) p. 47**

Regulation reduces the transaction costs through standardising grading systems, and the public bureau node entails state ownership of processing to try and reduce the costs of uncertainty. This model only considers asset specificity, which is only one of the aspects of transaction costs. Consideration needs to be given to other factors as well. Uncertainty and frequency of transaction are the other transactional characteristics that impact the cost of transaction.

There does not seem to be consensus on which direction the effect of frequency of transaction has on transaction costs (Klein, 2006). In traditional transaction cost literature by Williamson, the difference is made between standard (i.e. frequently occurring) and non-standard (i.e. idiosyncratic) transactions. Williamson (1998) points out that there will be differences in the levels of opportunism based on the level of interaction, day to day activities versus occasional occurrences (Williamson, 1998). The ex-

ante choice of governance can attenuate the ex-post hazards of opportunism (Williamson, 1998). Williamson suggests that the “cost of specialised (i.e. hierarchical) governance structures will be easier to recover for large transactions of a recurring kind” (Klein, 2006). In contrast, others suggest that an increase in the frequency of transactions between parties, a type of repeated-game theory, may create “the incentive to maintain a reputation for fair dealing (which) may be sufficient to mitigate opportunism, even in the absence of contracts or vertical integration” (Klein, 2006).

An attempt to expand the theoretical framework of transaction costs include bringing in ideas from the relationship marketing literature (Theuvsen & Franz, 2007). In addition to the structural aspects of transaction costs, behavioural determinants are included such as trust, preferences, and commitment. These factors can also have an impact on the efficiency of different governance structures and are explored further in the sections of vertical coordination and supply chain management (Theuvsen & Franz, 2007).

There is some contention around the use of transaction cost theory, with some suggesting that the theory has been adapted and applied to too many different types of empirical studies, and is being used not only to explain but to also influence business practices (Ghoshal & Moran, 1996). Opportunistic behaviour can lead to increased integration between firms, including creating safeguards and sanctions. Ghoshal and Moran (1996) highlight the need to differentiate between the attitude of opportunism, which is assumed to be independent of context and opportunistic behaviour, which is assumed to be context dependent. The authors suggest that Williamson’s theory may be useful as a positive rather than normative theory, as it is best used as a static theory and its domain of applicability is limited to predicting the existence of a small set of firms in markets with high opportunism. In situations with more integrated markets and institutions that decrease opportunism, the explanatory power of the other variable asset specificity is limited. While empirical studies may show a relationship between asset specificity and internalisation, some argue this should not be considered causality (Ghoshal & Moran, 1996).

Ghoshal and Moran (1996) consider it more important to develop the theory of organisations, whereby successful organisations learn to develop a social context to build trust and commitment to maintain cooperation between firms. While some research is trying to make incremental modifications to the transaction cost economic theory, such as trying to include variables of trust (Theuvsen & Franz, 2007), these findings may be evidence that falsify the basic tenets of the transaction cost theory (Ghoshal & Moran, 1996, p. 42). Further literature has also attempted to develop the transaction cost theory in conjunction with organisation theory (Baudry & Chassagnon, 2010). In addition, empirical studies have found that the level of transaction costs has been shown to not always dictate the extent of vertical coordination, and thus other factors may play an important role in vertical coordination decisions as well (Ferto & Szabo, 2002; Gong, et al., 2006; Hobbs, 1997; Woldie & Nuppenau, 2009).

## 4.2 Empirical work on producers choice of marketing channel

To be able to make good policy and management decisions, it is necessary to understand why producers choose certain selling channels, what producer’s value when they choose between different channels and what may discourage them. Globally producers generally have several options available when looking to sell their livestock. These options can differ in many aspects relating to the benefits a producer may receive and the costs or risks the producers faces. In some cases, the options can be placed along a continuum relating to the level of cooperation and coordination between the buyer and the seller. At one end of the continuum are spot market transactions, with full vertical integration at the other end. A myriad of options exist in between such as informal and formal long-term

relationships, sales and production contracts, and different levels of vertical integration such as retained ownership or strategic alliances. In addition, producers choose which type of outlet to sell too. Options can include a producer cooperative, a private or publically listed processing company, third party agents such as traders, or direct to livestock auctions. Even the decision between two seemingly similar firms will be based upon certain attributes that the chosen firm is offering.

#### **4.2.1 Transaction cost economics approach**

The producer's choice of selling channel has been studied by several different methods. The most common traditional approach is transaction cost economics using regression model analysis (Boger, 2001; Ferto & Szabo, 2002; Gillespie, et al., 2004; Hobbs, 1997; McLeay & Zwart, 1998; Woldie & Nuppenau, 2009). This method attempts to examine which factors have the most, or any, influence on the producers choice of selling channel.

Transaction costs exist in the agri-food supply chain due the nature of the products involved. Many food products are perishable, not homogenous, and lack visibility in quality and nutritional value (such as selling on a live-weight basis), which increases transaction costs (Hobbs & Young, 2000). This can be assumed to be due to the uncertainty and limited information about what is being traded, which can potentially generate opportunism or opportunistic behaviour. Additionally with the growing desire of consumers to know where and how their food is produced, more integrated supply chains are generating asset specific investments in some cases.

Unlike production costs, it is very difficult to measure transaction costs empirically due to lack of recording of such costs, or difficulty separating costs from management expenses (Hobbs, 1997). Ferto and Szabo (2002) reviewed a selection of empirical studies on transaction costs economics in the field of vertical coordination in agricultural marketing and found they do not unanimously support the transaction cost explanation of vertical coordination. In general they showed that while some types of transaction costs did have an influence on producer behaviour, they seemed to be context specific and often contradictory.

Theory suggests that transaction costs will have an important impact on the choice of marketing channel. A growing number of studies have empirically investigated the impact of transaction costs on a producer's choice of marketing channel. Dependent variables used include proportion of livestock sold through auctions compared with through direct to processing plants (Hobbs, 1997), the spot market compared with contracts (Gong, et al., 2006) or through private traders compared to marketing cooperatives (Woldie & Nuppenau, 2009). Four selling channel options of wholesale markets, wholesalers, marketing cooperatives and producer organisations were investigated in a separate study of 62 targeted larger market-oriented Hungarian fruit and vegetable producers, using a multinomial logit model (Ferto & Szabo, 2002). Two studies assessed livestock producer decisions for cattle sales (Gong, et al., 2006; Hobbs, 1997) and two assessed the sale of fruit and vegetables (Ferto & Szabo, 2002; Woldie & Nuppenau, 2009).

Boger (2001) used the transaction cost approach but was more concerned with providing insight into the vertical coordination methods used rather than whether transaction costs influence choice of channel. Therefore several other variables other than those to do with costs of transaction were included in the model. Boger (2001) assessed the choice of different types of channel: local slaughterhouse, large processor, livestock trader, and cooperative. However, the different types of governance structures (spot market, oral contract, or formal written contract) were included within the independent variables. Different independent variables relating to different channels attempt to model behaviour to predict the choice of channel option. Socio-economic characteristics capture producer age and education, and farm characteristics capture size of farm, number of animals, frequency and

size of sale lots, level of investment on-farm, and location from the market. Generally when applying this methodology, scholars assess producers decisions based on identical products being sold at one point in time. This assumes that a producer will make a decision about which channel to sell into based on a number of factors and then will remain in that channel. However producers will make many different decisions over time and may choose to switch between channels. It is quite a different decision for a producer to make regarding long-term specific investments to improve product quality, versus on the day decisions whether to contract or sell on spot market. These factors need to be taken into consideration when trying to investigate producer's behaviour and choice of channel.

Transaction cost economic studies usually group variables according to search, negotiation, and monitoring and enforcement variables (Ferto & Szabo, 2002; Gong, et al., 2006; Hobbs, 1997; Woldie & Nuppenau, 2009). Three studies included price uncertainty as a search or information cost variables (Gong, et al., 2006; Hobbs, 1997; Woldie & Nuppenau, 2009), and all four assessed time spent searching for price information (Ferto & Szabo, 2002; Gong, et al., 2006; Hobbs, 1997; Woldie & Nuppenau, 2009). Quality inspection prior to sale and the ability to meet quality specifications were also assessed by two (Gong, et al., 2006; Hobbs, 1997) while difficulty in accessing price information and the search for trading partner was assessed by the other two studies (Ferto & Szabo, 2002; Woldie & Nuppenau, 2009). Negotiation and bargaining costs were similar between the studies. Transportation costs and effort, speed of payment, and bargaining power were investigated in the four studies. The degree of asset specificity and interdependency was also captured by the four studies either through whether producers consider there were an adequate number of buyers (Hobbs, 1997; Woldie & Nuppenau, 2009), whether producers thought it would be a problem if buyer terminates the relationship (Ferto & Szabo, 2002), and the percentage of farm income from cattle (Gong, et al., 2006). Other negotiation costs included commission fees (Hobbs, 1997), frequency of sale (Ferto & Szabo, 2002; Hobbs, 1997), risk of non-sale and lack of control of sale at auction (Hobbs, 1997). Perceived bargaining power, time delay, transport effort, distance and number of sales in one year were analysed by Boger (2001), but these were not explicitly referred to as negotiation costs.

Monitoring costs include grade uncertainty (Ferto & Szabo, 2002; Gong, et al., 2006; Hobbs, 1997) and information asymmetry regarding grading (Ferto & Szabo, 2002; Hobbs, 1997). Boger (2001) looked at whether different grading systems (none, weight class or EUROP standards) had an impact on channel choice. Other monitoring factors included carcass shrinkage or damage (Hobbs, 1997), extent of services offered to producers such as technical support (Gong, et al., 2006), trustworthiness of buyers and existence of formal contracts (Woldie & Nuppenau, 2009).

Measures of uncertainty were used in almost all cases for each of the three types of transaction costs. Uncertainty in price and grading are linked to information asymmetries or limited information. Uncertainty in control over the transaction, and levels of bargaining power can be linked to the risk of opportunism. Concern about levels of dependency on the other party can be linked to opportunism and asset specific investments. While these connections can be made, the literature rarely discusses how and why the specific variables have been chosen to measure costs of transaction. While often the variables can be linked to the differences between transaction costs for the spot market versus the other types of marketing channels, the selection of variables is rarely analysed. Additionally there is a mingling of the human characteristic variables that are proposed to cause transaction costs (bounded rationality, limited information, and opportunism) and the transaction characteristic variables that increase or decrease the impact of transaction costs (uncertainty, frequency and asset specific investments). However there seems to be little consideration in the empirical literature of the interaction between the factors that impact transaction costs.

It is important to differentiate between measuring the effect of the costs of transaction related to the transaction characteristics and the costs of production related to a specific marketing channel. A case in point is that of asset specific investments. When deciding which channel to choose between, some more integrated channels may require the producer to make asset specific investments that incur a production cost such as a particular feeding or breeding regime. The impact of this production cost on whether the producer chooses to enter that marketing solution is a different decision to whether the producer decides to contract to safeguard asset specific investments once they are made. The impact of the production decision on channel choice is analysed in section 4.2.3 External factors and solution attributes impact on marketing channel selection, while the transaction cost decision is covered in this section.

These empirical studies of producer choice of selling channel illustrate that the transaction cost theory has been empirically extended beyond its original theme of markets versus organisations. The models attempt to determine the reasons behind a producer's choice of selling channel beyond the realm of governance choice such as the choice between different types of companies. Therefore making comparisons to transaction cost economics somewhat inappropriate.

In examining the results from empirical studies of the transaction cost economics approach, costs can be split into search, negotiation and monitoring costs. Search costs found to have significant influence on the choice of selling channel include time spent searching for price information, and availability and difficulty in sourcing market price information for Ethiopian fruit producers dealing with wholesale traders (Woldie & Nuppenau, 2009). This was the only study that found search and information costs to have an influence on choice of channel.

Negotiation costs that were found to influence market channel include negotiation time with traders (Woldie & Nuppenau, 2009), the adequacy of procurement staff from a cooperative, risk of non-sale at auction, time needed to be spent at auction (Hobbs, 1997), payment delays (Gong, et al., 2006), and bargaining power (Ferto & Szabo, 2002; Gong, et al., 2006). Price uncertainty was not a significant factor in the choice between channels when used as a variable (Hobbs, 1997; Woldie & Nuppenau, 2009). This could be because there is a level of price uncertainty present in each marketing channel option. Gong, et al. (2006) mentions that price premiums are known to have an effect on channel choice, however this is not included in the study. None of the variables considered in Boger (2001) were found to have a large influence on channel choice, however Boger analysed differences between sizes and types of processing companies rather than governance structures.

Monitoring costs that influenced the choice of channel included risk of grade uncertainty (Boger, 2001; Ferto & Szabo, 2002; Gong, et al., 2006; Hobbs, 1997), and trustworthiness of the wholesale trader (Woldie & Nuppenau, 2009). Boger (2001) found that more intensive grading systems increased the probability of selling to a large processor compared to a local slaughterhouse. However this relationship fails to capture the fact that large processors are more likely to have more intensive grading systems in the first place. Similarly Boger (2001) draws relationships between increased use of contacts and large processors, yet the study does not draw a connection that certain channels are likely to have more contracts in the first place. Delayed payment was found to have a significant impact on choice of channel in one study (Gong, et al., 2006) and not in another (Ferto & Szabo, 2002), even though this was considered an issue for small-scale producers. In studies that considered asset specific investments and frequency of sale, they were not shown to have significant impacts on the choice of channel (Boger, 2001; Ferto & Szabo, 2002; Hobbs, 1997).

Most of the studies aimed to identify and quantify the different transaction costs associated with different types of selling channels. However, this is linked to testing the transaction cost economic theory in general terms rather than with the aim of understanding actual producers' behaviour and

choice. This current study is more concerned with assessing the behaviour and choices of producers in relation to all possible solutions for selling stock. In this circumstance, the transaction cost approach is limited as it generally compares two identical types of solutions that only differ by governance structure. In this study, different types of solutions that differ by many attributes will be assessed. Transaction costs for each solution will differ depending not only on the governance structure but also on the length of time the producer has chosen a certain solution. Over time, learning and experience will lower transaction costs between parties, and therefore this cannot be directly compared to a newly established relationship in a different governance structure. Transaction costs will naturally be higher when migrating across coordination forms, or to new products or new markets. When investigating these factors, the nature of current relationships between producers and buyers needs to be accounted for to ensure similar products are being compared.

The transaction cost approach is considered especially important in developing countries or countries in transition where small-scale producers struggle to remain viable. It is of interest to assess the impact the creation of new marketing channels has on the costs of transaction to producers. Transaction costs seem to be more of a concern for small-scale producers from developing countries. From identifying these costs, academics have attempted to suggest ways to reduce the costs of search, negotiation, and enforcement through means such as increased use of contracts, providing more market information and regulating grading systems (Ferto & Szabo, 2002; Gong, et al., 2006; Woldie & Nuppenau, 2009). However, the studies do not consistently conclude that transaction costs dictate the choice of selling channel. For example, price uncertainty, frequency of transaction and asset specificity were found to have no influence on the level of integration in some studies. This suggests that there may be other factors that also influence channel choice other than the transactional costs of search, negotiation, and enforcement.

For New Zealand sheep and beef producers, certain transaction costs will be lower than the samples used in other studies. New Zealand producers have relatively good access to market price information for all types of channel options. Prices are often publically available and usually reflect current supply and demand conditions accurately. Different options for selling are generally well advertised to producers including the forecast prices and requirements for each option. Negotiation costs will most likely differ between options such as time spent writing contracts; however, this may not be large enough to have a significant influence on channel choice. Formal institutions and well-enforced arrangements ensure New Zealand producers generally do not have to worry about enforcement costs such as risk of non-payment or lack of trust in channel participants. New Zealand has a very modern and transparent carcass grading system that eliminates most risks around not carcass quality payment. These factors suggest other reasons may be behind any differences in channel choice.

Moreover the transaction cost theory suggests that greater integration will occur when transaction costs are higher, however in all industries there is generally a range of levels of integration. This suggests that the choice of channel may relate to the different perceptions of individual participants as to the costs of transaction from each different option. In these studies, often just one side of the transaction is considered, however the exchange is made up of two parties that will both have certain drivers.

#### **4.2.2 Producer preferences and characteristics and farm characteristics**

In addition to the transaction cost economics approach, studies have investigated internal factors that influence choice of channel such as farm characteristics and farmer preferences (Davies, et al., 1999; Fischer, et al., 2008; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008). These may relate to the strategic drivers of the farm business such as propensity toward flexibility and risk, and the level of

financial, production, or market imperative. The influence of internal characteristics such as socio-economic characteristics of the producer, and production related factors of the farm on channel choice have been investigated (Davies, et al., 1999; Fischer, et al., 2008; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008).

**a. Producer preferences impact on marketing channel selection**

Some strategic cluster studies explicitly linked the producer's strategic orientation to the choice of distribution channel such as spot market versus more integrated value chains (Davies, et al., 1999; Fischer, et al., 2008; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008).

McLeay and Zwart (1998) used the cluster analysis from McLeay, et al., (1996) to investigate the impact of internal variables such as strategic orientation and external variables on the choice of selling crops under contract or not. It was assumed that firms following different strategies are likely to have different core competencies, goals, attitudes to risk and ability to deal with risk (McLeay & Zwart, 1998). Producers following an Entrepreneur strategy (Arbitrage in previous study) are significantly less likely to use contracts than those following a Production/Production Flexibility strategy, Stability or Production/Market outlet strategy. Entrepreneurs were characterised by high market knowledge, and producing non-standardised products. The Differentiation strategy concentrates on sales and investment opportunities, and is the second most likely cluster to use spot market transactions. Producers following a Stability and Production/Production flexibility strategy do not focus on sales, but follow a simple and standardised process and are most likely to use contracts to reduce risk. This study illustrates that while contracts may be seen as a way to reduce transaction costs, certain producers will see other channels as more beneficial based on their own core competencies and goals.

The Buyer orientation group who had high market knowledge, channel flexibility, quality and traceability, and cost focus were strongly associated with selling to multiple channels primarily through group marketing channels such as producer groups or cooperatives. Higher quality stock is thought to be sold through the cooperatives and lower quality stock is then sold through other channels. Seller orientation focus on what consumers want and are primarily selling through livestock markets, but sell through the most number of different channels. Differentiators were most likely to use group marketing schemes, but also have high percentage using livestock auctions. The study indicated that many producers used multiple channels which could indicate that poorer livestock are sold via livestock auctions while higher quality stock are sold through other channels (Davies, et al., 1999).

Tsourgiannis et al. (2008) identified an association between marketing channels and strategic typology groups identified in a previous study that grouped the producers into a differentiation, production orientation or returns focus. For each channel option of local private milk processing plant, cooperative milk processing plant, big national dairy farm, or private use of milk, the proportion of producers allocated to a certain strategic group were identified. However, this was not presented in as useful format as it could be, as it only identified the proportion of producer group of each channel option. This just showed that for each channel the proportion was split similarly between differentiation, production orientation and returns focus, rather than which channel was most used by each strategic group.

While not carrying out a clustering study, Fischer, et al., (2008) looked at the general strategic orientation of producers (and others in supply chain) of remaining independent as a company. This study also assessed the impact of other enterprise-level variables on the choice between formal and non-formal chain relationships in different agri-food supply chains in Europe. Other variables included the general strategic orientation of avoiding risks, and the orientation toward making long-



term decisions. The propensity to remain independent was expected to increase likelihood of non-formal relationships while risk avoidance and long term decisions orientation was proposed to increase likelihood of formal relationships (Fischer, et al., 2008). Results found that independence and long term decision orientation did have an influence of the choice between formal or non-formal relationships, while risk avoidance did not.

The studies illustrate that producers that have entrepreneurial, differentiation or independent tendencies are more likely to use spot markets, or a variety of selling options (Davies, et al., 1999; Fischer, et al., 2008; McLeay & Zwart, 1998). While contracts seem to be preferred by producers with more of a stability or production focus (McLeay & Zwart, 1998), other studies illustrated that a variety of channels can be used by different types of producers without any strong link to a certain strategy (Davies, et al., 1999; Tsourgiannis, et al., 2008). There is a risk if elements of the selling channel are included in the constructs. There could be a relationship between certain variables such as preferring sales flexibility and selling on the spot market versus contracts.

### **b. Producer and farm characteristics impact of marketing channel selection**

While the overall strategy of the producer can influence channel choice, certain characteristics of the producer and the farm can have bearing on the type of channel chosen as well. Some studies linked internal farm and producer characteristics into wider studies (Isengildina & Hudson, 2001; Tsourgiannis, et al., 2008), while for other these factors were the only variables analysed in channel choice decisions (Blandon, et al., 2009; Gillespie, et al., 2004; Key, 2005; Wachenheim, et al., 2001).

Gillespie, et al. (2004) used a regression model to investigate the impact of socio-economic, farm characteristics and measures related to farming competency on choice of United States beef marketing channel. The dependent variable was the different sales outlets: conventional auction, video auction, private treaty, retained ownership, strategic alliance or one or more alternative options. Wachenheim, et al. (2001) attempted to characterise the membership of an Illinois hog-marketing cooperative, in effect investigating the characteristics of producers who prefer to use marketing cooperatives. The study also identified perceived benefits and costs of participating in the cooperative. A similar study assessed the perceived benefits and costs of selling cattle through pooled cattle sales in Arkansas (Popp & Parsch, 1998). Blandon, et al. (2009) compared the difference between small-scale fruit and vegetable producers in Honduras selling to an integrated supermarket supply chain versus the spot market. Isengilda and Hudson (2001) compared the character differences between the use of cash sales, pooled sales, forward contracts, and direct hedges by United States cotton producers.

Key (2004) compared independent operators and producers that contracted production. However, the purpose of this was as a first step in calculating the risk and autonomy premia as a function of relative risk aversion given estimates of the mean and coefficient of variation of income for both independent and contract operators. Key (2004) assumed that the decision whether to contract or produce independently is based on the distribution of income and non-pecuniary attributes associated with both options. He surmised that the benefits from contracting such as risk reduction might be overestimated if non-pecuniary benefits enjoyed by independents such as right to make management decisions are not accounted for. While non-pecuniary benefits such as independence were not explicitly analysed in the transaction cost economic approach (Ferto & Szabo, 2002; Gong, et al., 2006; Hobbs, 1997; Woldie & Nuppenau, 2009) or in other approaches assessing what is important from marketing options (Blandon, et al., 2009; Boger, 2001; Gillespie, et al., 2004; Popp & Parsch, 1998; Wachenheim, et al., 2001), this could be due to the specific loss of certain non-pecuniary benefits associated with fully contracted production that are not lost when choosing between a sales contract versus spot market. In addition, Key (2004) does not use the same method to value these attributes, but rather uses surveys of differences in producers' behaviour and means and standard

deviations of incomes received to compute the risk and autonomy premia. While Key (2004) acknowledges non-pecuniary benefits from independent production, there is no mention of non-pecuniary items from contractual production. These may include satisfaction from producing to tight specifications or being a critical part of an integrated supply chain. Other studies of supply chain channel choice do not mention non-pecuniary aspects (Blandon, et al., 2009; Boger, 2001; Ferto & Szabo, 2002; Gillespie, et al., 2004; Gong, et al., 2006; Hobbs, 1997; Popp & Parsch, 1998; Wachenheim, et al., 2001; Woldie & Nuppenau, 2009). Certainly, this area needs to be explored further in relation to producer channel choice.

Age and education were the most common variables considered (Blandon, et al., 2009; Gillespie, et al., 2004; Isengildina & Hudson, 2001; Key, 2005; Tsourgiannis, et al., 2008; Wachenheim, et al., 2001). The size of the farm business operation was often considered either through number of livestock (Blandon, et al., 2009; Boger, 2001; Gillespie, et al., 2004; Wachenheim, et al., 2001), farm assets (Blandon, et al., 2009; Isengildina & Hudson, 2001; Key, 2005), or amount of production (Blandon, et al., 2009; Key, 2005; Tsourgiannis, et al., 2008). Proxies for producer competence for included in some studies including livestock weights (Boger, 2001; Gillespie, et al., 2004), whether stocker cattle are produced, weaning weight of calves, percentage of cows purebred, number of contacts with extension agents, number of vaccines administered to calves prior to sale (Gillespie, et al., 2004), net return per unit (Key, 2005), and extent of intensive farming practices (Tsourgiannis, et al., 2008), production costs and on-farm investment (Key, 2005). The dependence on the analysed farming practice was also often included through variables such as percentage of farm income from specific product (Gillespie, et al., 2004; McLeay & Zwart, 1998; Wachenheim, et al., 2001) and the existence of off-farm income (Gillespie, et al., 2004; Tsourgiannis, et al., 2008). The impact of number of outlets sold to was investigated by two studies (Tsourgiannis, et al., 2008; Wachenheim, et al., 2001).

Other independent variables included producer loyalty (Tsourgiannis, et al., 2008), experience farming (Key, 2005), ownership structure, frequency of shipping, average size load, distance to local market, whether the producer faced transportation problems, and whether they were a member of a producer organisation (Wachenheim, et al., 2001). Producer preferences such as self-assessed risk aversion, attitudes toward using hedging as a risk management tool, receiving higher prices through pooled sales over individual sales, belief in market-timing strategies increasing revenue, as well as debt or leverage levels, and crop insurance purchases and were included in one study (Isengildina & Hudson, 2001).

Internal factors were often assessed in conjunction with either overall strategic orientation or external factors. In most cases, at least one internal factor had an impact on the choice of selling channel. There was no strict relationship between these variables and choice of channel, with all studies having different results in terms of the level of significance and direction of the relationship (Blandon, et al., 2009; Boger, 2001; Gillespie, et al., 2004; Key, 2005; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008; Wachenheim, et al., 2001). The studies that relate to a similar situation as New Zealand sheep producers or comparing spot market to more integrated supply options are considered below.

Due to the majority of cattle producers using conventional auctions to sell at least some of their cattle, the model for Gillespie, et al. (2004) had a relatively poor fit. Although several alternative channels were originally considered, the model was rerun to combine all alternative methods compared to use of conventional auction. Results showed producers using one of the alternative marketing arrangements had more animals, higher weaning weights, were more diversified, were younger, consulted more often the an extension agent and depend less on income from off-farm sources (Gillespie, et al., 2004). This is similar to New Zealand, where the majority of livestock are sold by

conventional schedule prices, but there are some producers who choose to sell through a selection of alternative marketing options. However, as Gillespie, et al. (2004) grouped the alternative marketing arrangements together, and due to the lack of model strength, reasons why certain alternative marketing arrangements were not covered.

McLeay and Zwart (1998) found that as the percentage of income from the particular crop increased, so too did the use of contracts for that crop. This reflects the level of risk associated with the main source of income and could be similar in the case of sheep and beef producers wanting to reduce market price risk for one area of the business relative to the other. Pork producers in the United States were found to be more likely to contract if they were less experienced (although age was not found to be significant), less years of education, a primary source of off farm income, and increased size (at a decreasing rate) (Key, 2005). Boger (2001) found no relationship between marketing channel and the level of production costs or size of the farm. However there was a relationship between better quality hogs (lower carcass weights) and selling to a large processor. Isengildina and Hudson (2001) found that producer preferences are among the most important factors affecting producer marketing behaviour, particularly their belief in the value of market pooling of products, and using means other than hedging for risk management. Level of education and purchase of crop insurance were not found to have an effect on marketing channel (Isengildina & Hudson, 2001).

The studies suggest that while there may be some relationships between certain demographics and choice of selling channel, a stronger relationship exists between producers with more entrepreneurial and independent tendencies being less likely to enter into contractual supply arrangements. Producers that are more diversified and less reliant on one product for their income are less likely to contract, although in one case if producers had another primary source of income off-farm this increased the likelihood of contracting. Two studies linked off-farm income to decreased use of contracts (Gillespie, et al., 2004; Isengildina & Hudson, 2001), while one found the opposite to be true (Key, 2005). This could illustrate that some producers are inclined to contract their main product to reduce risk, whereas for others it is convenient to contract production because it is just a small part of their income. Those that do not contract may see it as important to have the flexibility to market their product through a number of outlets. Although the studies took into account farm characteristics such as area, herd size, crop mix, and human resources such as age, level of education and farming experience, the impact of differences in farm resources such as land, climate, or livestock genetics were not extensively covered.

### **4.2.3 External factors and solution attributes impact on marketing channel selection**

In addition to the internal producer characteristics and strategies, external variables and the attributes of each solution that influence channel choice are investigated (Blandon, et al., 2009; Boger, 2001; Isengildina & Hudson, 2001; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008). The solution attributes can be defined as differences in the features of each supply channel. These could include the level of interaction with buyers, flexibility, price systems, risk, requirements, and any other factors that differentiate solutions not related to the cost of transaction. External variables cover all factors not related to the internal operation of the farm business such as industry factors, and product characteristics. Four studies used regression analysis to measure the influence of different external factors on a producers choice of supply channel (Boger, 2001; Fischer, et al., 2008; Isengildina & Hudson, 2001; McLeay & Zwart, 1998) one used a stated choice model (Blandon, et al., 2009) and others asked respondents to rank importance of different channel variables (Popp & Parsch, 1998; Tsourgiannis, et al., 2008; Wachenheim, et al., 2001).

### **a. External factors**

When assessing New Zealand crop producers channel choice between cash sales and contracts, McLeay and Zwart (1998) included internal and external variables. External variables related to the influence of industry impacts by different crop type. Binary variables were used to quantify the level of risk for each different crop type relating to price variability, perishability, level of asset specificity, and the information environment. Industry experts were used to classify risk levels. Information environment was assessed in terms of whether or not the crop was a traditional crop, and whether the price was impacted by domestic supply and demand. Traditional crops are better understood in terms of risk, and domestic price crops have market balances that can counter any production risks. McLeay and Zwart (1998) was the study that most comprehensively covered industry factors, however the study compared differences between crop types and whether the differences may lead to increase in contracts. This analysis was not conducted to the extent that external opportunity and constraint sets were investigated for the impact on producer strategy (Poole, 2000). Isengilda and Hudson (2001) assessed differences between cotton producers' use of cash sales, pooled sales, futures option and direct hedging. The study looked at the influence of government payments in terms of the proportion of income made up of disaster payments and loan deficiency payments that could influence channel choice.

Boger (2001) was the only transaction cost study that assessed whether the price received compared to average had a relationship on the choice of selling channel. However this can only determine a relationship between prices received and the type of selling channel, rather than implying that the producer chose the channel because of higher expected prices as producers were asked how prices they received in the previous season compared with the average.

External factors investigated in McLeay and Zwart (1998) that were expected to increase or decrease the likelihood of contracting respectively were physical capital investment and whether or not it was a traditional crop, and this was supported by the results. Physical capital related to comparisons of asset specific investments for the different types of crops, and traditional crop producers are more likely to have high levels of production and market knowledge. Factors that did not have a significant impact of likelihood of contracting were perishability of the crop and price variability. The study concluded that knowledge of the market and ability to understand the sources of uncertainty were important factors when deciding whether to enter contracts or cash sales. This study was based in New Zealand, and therefore is comparable in terms of farming scale and operating environment. However, the basis of this study is comparing the behaviour of producers based on different crop species. New Zealand sheep producers generally all produce the same type of product and face the same industry factors, yet there are still differences in marketing behaviour. Therefore while industry factors can be considered relative to other commodity goods, other differences may also need to be considered such as climatic differences by regions, or land class. Similarly Fischer, et al. (2008) found that product factors can have an impact of channel choice. Higher product-quality requirements did increase the likelihood of more formal relationships, while the level of competition in the market had no effect (Fischer, et al., 2008). The requirement for higher production quality could be linked to asset specific investments.

The only external variable considered in Isengilda and Hudson (2001) was participation in government subsidy programmes. Participation was found to increase the likelihood of selling through cash sales and decrease probability of using other selling channels. However, the model did not have a high degree of explanatory power. Government subsidies are not used in the New Zealand sheepmeat sector, but it does provide insight into the consideration of other risk management mechanisms that producers may consider when offsetting market risk.

### **b. Solution attributes**

Producers' preferences for different features of marketing channels were compared in different studies (Blandon, et al., 2009; Popp & Parsch, 1998; Wachenheim, et al., 2001). Attitudes of independent United States pork producers and members of cooperatives were investigated based on a survey of behaviour and rating of factors of importance when choosing between different marketing options (Wachenheim, et al., 2001). Potential benefits and costs from pooling cattle for Arkansas beef producers were also investigated on a rating scale (Popp & Parsch, 1998). The decision process of small scale fruit and vegetable producers from Honduras was captured in a stated choice model where producers were given an array of variables and were asked whether they would sell under those conditions or not (Blandon, et al., 2009). The stated choice model proposes hypothetical contracts to producers in order for them to evaluate different attributes.

The attributes can generally be grouped into several aspects. Firstly, the level of flexibility, either of payment, grading or timing of sales (Blandon, et al., 2009; Popp & Parsch, 1998; Wachenheim, et al., 2001). Secondly, the level of price premiums or discounts that are attributed to the different channel options (Blandon, et al., 2009; Popp & Parsch, 1998; Wachenheim, et al., 2001). Thirdly, the level of investments that are needed to join a certain option (Blandon, et al., 2009; Wachenheim, et al., 2001). Additionally the pricing system in terms of speed of payment, or whether producers are paid an average price (linked to cooperatives or pooled supply options) (Blandon, et al., 2009), and whether increased access to processing space, information, interaction with other producers, improved genetics, technology and production efficiencies were made available through the chosen supply option (Wachenheim, et al., 2001).

The most common solution attributes that influenced producers' choice of channel related to price, either price certainty from contracts (Blandon, et al., 2009), or the opportunity to receive higher prices from a cooperative (Popp & Parsch, 1998; Wachenheim, et al., 2001). Certainty in the amount of quantity to be purchased was also found to be important, relating to security of a market for produce provided from contracts (Blandon, et al., 2009). Secondary benefits from selling to a cooperative included transport cost savings from selling through a cooperative (Popp & Parsch, 1998), and improved access to information, better genetics and the ability to improve production efficiency (Wachenheim, et al., 2001). Concerns were similar for entering into these channels and included receiving an average price for combined livestock and thus not being paid for quality (Popp & Parsch, 1998; Wachenheim, et al., 2001). However only very few cattle producers (up to 4%) were currently selling through pooled cattle sales, and respondents were asked whether they strongly agreed or disagreed, or agreed or disagreed with three statements relating to the benefits and constraints of selling cattle pooled (Popp & Parsch, 1998). This does not necessarily get the same results as attempting to find the reasons why producers do or do not sell cattle pooled.

Wachenheim, et al. (2001) examined how cooperatives could continue to provide value to suppliers as competition from integrated supply chains increased. The study showed that cooperatives are providing value, especially in providing higher prices and services that suppliers find important. However, there is a gap between the level of importance suppliers put on some factors and the level of agreement with the service provided by cooperatives. Main concerns with entering contractual supply arrangements were found to be delayed payment, significant investment that needed to be made, and if the producer had to deliver product to a further away destination. Factors that did not impact producers choice of market channel included the level of grading required and whether there was a predetermined delivery schedule (Blandon, et al., 2009).

It would seem that price and payment systems play an important role in determining producer behaviour relating to marketing channels. Producers appreciate the opportunity to join channels that

offer premiums, but do not appreciate when their prices are averaged in a pooling system (Bandon, et al., 2009; Popp & Parsch, 1998; Wachenheim, et al., 2001). Certainty and security were some of the main factors behind entering contracts, especially if the producer has greater asset specific investments than others, although the need for certainty reduces if the producer has increased knowledge of the product and its market, or other risk management strategies (Bandon, et al., 2009; Isengildina & Hudson, 2001; McLeay & Zwart, 1998). Services offered can persuade producers to enter a certain channel, such as cost savings, and access to increased information, genetics or technology (Popp & Parsch, 1998; Wachenheim, et al., 2001). Barriers to certain channels may include averaging prices paid to producers, distance and the costs of investment to join (Popp & Parsch, 1998; Wachenheim, et al., 2001).

#### 4.2.4 Conjoint analysis

Conjoint analysis is a common tool used for multivariate analysis in psychology, marketing research and other studies such as surveys of consumer preferences for environmental amenities (Chan-Halbrendt, Zhllima, Sisor, Imamida, & Leonetti, 2010; Veale & Quester, 2009). This methodology assumes that consumers base their decisions not just on a single attribute, but instead ‘evaluate each product alternative holistically, judging the overall product offer by combining the separate amounts of ‘utility’ provided by each product attribute level’ (Veale & Quester, 2009, p. 138). Respondents are presented with an array of options with different attribute level combinations. This allows for a degree of ‘realism’ within a controlled experimental design, while limiting self-report bias as one does not need to make explicit the attributes under study (Veale & Quester, 2009). Additionally there is the ability to measure metric, non-metric or categorical variables simultaneously (Veale & Quester, 2009). The survey design allows for ‘the estimation of monetary values when including price as one of the attributes’ (Chan-Halbrendt, et al., 2010, p. 58).

Assessment of certain variables can be made by means of ranking or rating different scenarios with varying levels of each variable. While historically this method has been primarily used to analyse consumer decision-making in relation to product attributes, the use of conjoint analysis has been extended to decisions made at other points of the supply chain (Hobbs, 1996; McDermott, et al., 2004; Stanford, et al., 1999).

Hobbs (1996) investigated whether different supply channels imposed different types (and levels) of transaction costs on beef processors. United Kingdom beef processors have several supply chain options. The most popular are live-ring auctions or direct from producers to processors, with electronic auctions and cooperatives taking a small proportion of cattle (Hobbs, 1996). Hobbs (1996) defined the differences in information, negotiation and monitoring costs for different supply channel options for processors. A conjoint analysis was used to determine the preferences of processors for attributes of different channels. Some attributes were classed as transaction costs, while others could reduce transaction costs (Hobbs, 1996). Each supply channel had a number of attributes, each with two or more levels. A conjoint analysis was carried out to assess the attitudes of processors towards certain factors rather than try to measure the costs of different vertical coordination options. Hobbs (1996) based this analysis on the “premise that a supply chain can be viewed as a bundle of attributes of characteristics, just as goods and services are sometimes viewed by economists as bundles of attributes. An abattoir’s preference for a supply channel is determined by the particular bundle of attributes which characterise that channel” (Hobbs, 1996, p. 514). Players in the supply chain are assumed to “evaluate the ‘total worth’ of a supply channel by combining separate evaluations of the ‘part-worth’ of each attribute” (Hobbs, 1996, p. 514).

In Hobb's (1996) study, four attributes were chosen from interviews with industry experts, and assigned different levels. Attributes included continuity of supply (occasional or regular supplier), the degree to which animals were handled when being transported from the farm to the abattoir (direct or more than once), method of payment (liveweight or deadweight), and degree of traceability (easy or difficult) (Hobbs, 1996). Fractional factorial design was used to reduce the number of scenarios for respondents to evaluate to eight. The scenarios do not necessarily describe existing channels. Because scenarios are hypothetical, they need to be plausible and capable of being traded off by respondents (Hobbs, 1996). However this is not explicitly tested within the study.

Ease of traceability was found to be the most important determinant of supply chain channel, and is thought to suggest that the monitoring costs are high. This was considered due to the introduction of the 1990 Food Safety Act, which puts more stringent requirements on processors. These extra requirements may have outweighed the importance of the other features, which the processors may have more experience in dealing with (Hobbs, 1996). Traceability was found to be even more important for larger processors. Given that traceability is the most important factor identified, this may impact on the amount of cattle sold under auction, where traceability is harder to achieve.

A similar study was carried out by Stanford, et al (1999) who aimed to assess the relative importance of a number of attributes considered by Canadian lamb processors. Attributes were similar to the study by Hobbs (1996) and included the regularity of supply (long-term regular or occasional), the basis of payment (carcase weight and graded, carcase weight, or live-weight), the handling of lambs between the farm and abattoir (once/direct or more than once), and the price paid for the lambs (2% price premium, market value, 2% price discount). Participants were presented with 11 scenarios and asked to rank them from most preferred to least preferred. Price paid was found to be the most important attribute, followed by basis of payment and then handling of lambs. Prices for lamb in Canada were at historically high levels at the time of the study and could in part explain the dominance of price in processors' considerations (Stanford, et al., 1999).

In a study aiming to determine the performance measures important to New Zealand beef producers in their selling decision, the effects of context and different attributes of selling channels were investigated (McDermott, et al., 2004). A conjoint analysis study was carried out to study producer choice decisions. Respondents were asked to rank and rate different selling scenarios to establish which variables were most important in decision-making. Variables included price level, payment security, quality assurance branding, space allocation lead-time, sharing of buyer's information, comfort with buyer, and quality and effort reward. Producers were asked to do this under two contexts, with contracts or spot market transactions. However, context was not found to have an effect on results.

Respondents were found to favour scenarios in which they had higher price and payment security, less than one week lead time for space allocation, a purchasing meat company that shared its direction and market position information, and where they earned a reward for quality and effort (McDermott, et al., 2004). The most important factors were equally a higher price than average, and high payment security. Payment security levels were "unsecured" or "Personal Properties Security Act registered." This Act provides for the "creation and enforceability of security interests in personal property" (McDermott, et al., 2004, p. 35). Just over half of respondents were aware of the Act, and this group was compared to those who were not aware. Those who were aware appeared to prefer more security in their transaction but placed less emphasis on price. The high importance of payment security and the difference between those aware and those unaware could be due to the attribute level which some may thought implied by "unsecured" that there was an increased underlying risk of payment default than actually exists in reality.

Comfort with the buyer and branding with a quality assurance audit were not seen as important. The experimental design did not allow reliable analysis of interactions between factors. This method of analysis does not seem to allow for establishing trade-offs between variables. It could be easily assumed before the results that were revealed that producers would prefer higher prices, higher flexibility in sales, being paid for quality, and sharing information and direction with the processor. There was little difference in results between producers based on number of cattle sold. An attempt was made to split producers into clusters based on their preferences. However, the cluster groups were not overly significantly distinctive and therefore few conclusions can be drawn about the characteristics. The results of this study could be directly comparable to a study of New Zealand sheep producers, as most livestock producers carry both sheep and cattle. While being able to build on the results from the first study, additional research could also establish if there were any differences in preferences for producers when selling cattle compared to sheep.

#### **4.2.5 Innovation diffusion and complementarities theory**

Several theories have tried to refute or extend the transaction cost approach to analysing producers selling decisions. Some believe the transaction cost approach is too rigid as it depicts a “discrete choice of one organisation form in a static equilibrium context” and therefore to understand economic change, a more dynamic systems approach is needed (James, et al., 2011). A new approach was considered appropriate given the extent that contracts and vertical integration adoption vary widely across farm types, regions and commodities (James, et al., 2011). Economists have generally “devoted less attention to theories of economic change than to static models of economic efficiency” (James, et al., 2011, p. 8). One important exception to this is the literature on the differences in adoption of new technologies (James, et al., 2011).

The innovation diffusion literature according to Sahin (2006) firstly examines changes in behaviour and describes any obstacles to, and motivators of, innovation; secondly it explains the process of innovation adoption; and lastly groups participants depending upon how quickly they take up new innovations (Sahin, 2006). Sahin (2006) describes a detailed review of Rogers (2003) diffusion on innovation theory. Rogers (2003) offers four main elements in the diffusion of innovations. Firstly the innovation itself, which may be an “idea, practice, or project that is perceived as new by an individual or other unit of adoption” (Sahin, 2006, p. 13). Uncertainty of consequences is an important obstacle in the adoption of innovations (Sahin, 2006). The next element is the communication channels used to provide the message, either through mass media or interpersonal communication. Interpersonal communication is seen as more powerful in creating change when strong attitudinal preferences exist (Sahin, 2006, p. 14). Thirdly, the element of time, which is ignored in most behavioural research, is a critical factor in the analysis of innovation uptake. Time is considered in the process of adoption and the descriptions of different types of adopters (Sahin, 2006). Lastly the social system also affects innovation diffusion through social structures which affect individual’s innovativeness and desire for joint problem solving to accomplish a common goal (Sahin, 2006, p. 15). Adoption of new technology is said to be related to the attributes of the technology which can help to decrease uncertainty of adoption. Attributes identified by Sahin (2006) include:

1. The relative advantage of the technology compared to the idea it supersedes;
2. The compatibility or degree to which the technology is consistent with existing values, past experiences and needs of the adopter;
3. The level of complexity or the degree to which the technology is perceived as being relatively difficult to understand and use;



4. The triability or degree to which the technology can be experimented with on a trial basis, and lastly;
5. The observability or degree that the results of the technology are visible to others.

An additional theory is the complementarities theory that suggests the rate of adoption of contracts and other more integrated supply chains is reliant on the state of complementarities for that specific commodity, farm types and region (James, et al., 2011). James, et al. (2011) suggest that the rate of adoption of new more integrated supply channel options will be affected by the complementarities of variables within the sector such as requirements for long-term contracts to obtain finance, changes in consumer demands such as traceability, technological developments, and organisational change such as consolidation of global food retailers and processors. The authors explained differences in the rates of adoption of contracts and more integrated supply chains between the hog and poultry industries in the United States. Differences in producer attitudes, characteristics and levels of human capital were also considered in their analysis. The authors argued that sectors characterised by strong complementarities are expected to have relatively steep adoption curves once a new form is embraced (James, et al., 2007, p. 13).

An example of producers decision-making linked to innovation diffusion and supply chains is the uptake of organic farming. Studies have looked into not only the reasons for organic farming, but the underlying rationale that motivates producers' behaviour (Darnhofer, et al., 2005; Fairweather, 1999; Padel, 2001). Fairweather (1999) and Darnhofer, et al. (2005) use producer interviews and decision trees to map out important drivers and constraints for producers which impacts on the decision to convert to organic production or not. From this, groups of producers can be clustered together based on their decision criteria. Decision trees can highlight factors that eliminate choices for producers, as well as factors that motivate or constrain action. Results highlighted that there are a range of diverse motivations for organic farming in New Zealand (Fairweather, 1999). The study aimed to "understand producers' viewpoints sufficiently so that motivators and constraints were apparent". The author notes that one must "accept beliefs as motivators for behaviour even though that belief in the opinion of others, may not be well founded" (Fairweather, 1999, p. 54). Darnhofer et al (2005) highlight that while surveys are useful to capture a large number of respondents, the statistical analysis creating a model to measure the strength of each barrier "limits the amount of insight into the structure and relationship between barriers" (Darnhofer, et al., 2005, p. 40).

Studies on innovation diffusion illustrate a theoretical and empirical alternative for analysing producers' decision making including supply chain decisions. This theory captured the dynamic nature of decision making, and could be integrated with theories on transaction cost economics to try and explain differences in behaviour of different types of producers.

#### **4.2.6 Producers buying behaviour**

Several studies have looked to analyse producer behaviour in different areas of information searching and buying behaviour. While not directly related to a producers' choice of marketing channel, the concept of what is important to producers when choosing between products, and the activities they carry out when doing this is relevant. Some studies have clustered producers with the aim of market segmentation for businesses looking to provide input products and services to producers (Feeney, et al., 2011; Gloy & Akridge, 1999; Gunderson, et al., 2005). These studies aim to segment producers based on their preferences when making buying decisions for large scale agricultural producers in the United States either buying capital items (Gunderson, et al., 2005) or choosing between input suppliers (Gloy & Akridge, 1999), and for mid-sized Argentinean crop producers purchase of seed inputs (Feeney, et al., 2011). The studies use similar methodologies whereby producers are asked to

allocate a proportion of influence of certain variables to the decision. Variables were price, performance, convenience and location, customer service, support service, and personal factors. These variables are used to create clusters of producers based on which variables were considered most important. Clusters were identical for two studies being Price, Performance, Balance and Convenience (Feeney, et al., 2011; Gloy & Akridge, 1999). While Balanced, Economic, Business, and Relationship clusters were developed in the other study (Gunderson, et al., 2005). The studies then all created multinomial logistic models to be able to try and predict cluster participants. Variables analysed were similar and included demographics characteristics, management practices and information sources used, influences of decisions, and loyalty to brand or sales representative. There were mixed results with some finding that variables could assist in predicting cluster membership particularly demographics (Gloy & Akridge, 1999), while others found demographics had no significant impact (Feeney, et al., 2011).

Other studies (Bunn, 1993; Diekmann, et al., 2009; Kool, et al., 1997) have looked at the searching behaviour of producers, and attempted to categorise producers based on their searching activities and the situational characteristics of the exchange. The three studies all looked at the activities carried out by the producer including degree and involvement in searching for information, and level of analysis and evaluation of alternatives. These activities were used to create clusters which were then combined with situational characteristics. Situational characteristics included the importance of the purchase, task uncertainty, extensiveness of choice, and perceived buyer power (Bunn, 1993); general versus specialised information, the level of involvement, and the level of interest (Diekmann, et al., 2009); and the product related characteristics, the type of farm enterprise, and the relationship with the vendor (Kool, et al., 1997). Individual characteristics such as experience, involvement, quality consciousness and market orientation were included in Kool, et al., (1997). Producers were found to differ in their level of involvement in searching (Bunn, 1993; Diekmann, et al., 2009; Kool, et al., 1997).

While these studies (Feeney, Berardi, & Steiger, 2011; Gloy & Akridge, 1999; Gunderson, Boehlje, & Gray, 2005; Bunn, 1993; Diekmann, Loibl, & Batte, 2009; Kool, Meulenberg, & Broens, 1997) looked at the process of producers searching and buying activities, they highlighted that producers differ in their approaches to making decisions and what is most important in that decision. This includes their preferences for acquiring information and evaluating alternatives. In these studies differences in the task or product were shown to affect behaviour (Bunn, 1993; Kool, et al., 1997), as well as perceived benefits compared to the effort required (Diekmann, et al., 2009). While in the present research the task and product are the same, the producer's perception of the difficulty and benefits from searching and evaluating may affect the extensiveness of their selling behaviour. Other studies showed that differences in producers' preferences will determine what factors are most important when dealing with suppliers (Feeney, et al., 2011; Gloy & Akridge, 1999; Gunderson, et al., 2005).

### **4.3 Summary of producers choice of supply chain integration**

This section of the literature review aims to investigate different theories behind producers' choice of selling channel. Options analysed include the choice to enter more formal contractual supply chain relationships, or the decision between different types of processing companies. The transaction economics approach has traditionally been the most common method to determine the drivers of different types of transactional exchanges. Theory suggests that increased integration through contracts and more formal relationships will occur to safeguard investments and reduce uncertainty. The theory is driven by assumptions about the nature of human behaviour and how this will impact on

exchanges between two parties. This is founded in static economic theory whereby the most efficient outcome which minimises the costs of transaction will prevail.

Secondly the relationship between a producer's strategic orientation and choice of channel was explored. It would seem that a producer is more or less likely to contract depending on their strategic orientation towards entrepreneurship and differentiation compared to the desire for stability, and how important the role of marketing is to the business. This introduces the idea that the choice of channel relates to the type of person rather than pure economic efficiency grounds. Next, the impact of farm and producer characteristics on choice of channel was explored. Again it seems that producers who are younger and more independent are more likely to prefer to retain control of selling decisions, and not contract. This supports the theory that the type of producer will have an impact on the choice of channel, but extended this to include the effect of the type of farming operation and the extent the business relied on the product being sold. Some studies looked at the effect of the external environment on the choice of channel. It seems that industry and market factors may drive closer collaboration between producers and processors, however this is largely at an industry level. These factors may lead to an increase in the availability of more coordinated options, but do not necessarily explain what it is about them that leads producer to sell their products in that way.

The next section introduced the notion of producers picking between channels based on the features of the 'solution'. Producers were asked to rate what they preferred and disliked about different marketing channel options. This contrasts with previous studies by analysing the choice of channel as a decision process rather than an outcome based purely on economic efficiency or producer characteristics. This implies that there are potentially many different reasons related to the actual features of the channel that result in a producer choosing a certain channel. These features may or may not be related to reducing the costs of transactions or their personal or farm characteristics. Conjoint analysis allows for the analysis of individual's decisions based on a bundle of attributes. This method expands on the theory of transaction costs in that producers make inherent trade-offs between channels based on the individual's perceptions of the costs of transaction. The individuals with different perceptions of transaction costs can then be grouped together. This method also uses a static unit of analysis, whereby producers are at one point in time comparing different channels. A more dynamic method is the application of innovation diffusion and complementarities theory to analyse a producer's uptake of more integrated supply channel options. This aligns with analysing the attributes of a solution, but takes a more holistic approach in assessing which attributes encourage or dissuade a producer from adopting a more formal, contractual supply channel. Decision trees can then group producers by their behaviour as well as the different motivators and constraints that compel the behaviour.

From the summary of the empirical studies into a producer's choice of supply channel, it would seem that the level of transaction costs is not sufficient in determining the extent of coordination in a supply chain. Human, farm, and product characteristics will play a role in the choice of channel. These factors will all link in with the external market environment, whereby a producers perceptions of the trading environment in which they sell the product will influence the value they place on different attributes of the different supply channel options available. These attributes may minimise the costs of transaction for different producers based on producers' perceptions of their own human capabilities and resources and the different transaction characteristics such as asset specificity and uncertainty. A producer's decision may change over time as the perception and influence of certain factors alters, which could lead to a different decision tree exit point.

In relation to overall producers' decision making, some producers seem to prefer a certain supply channel because it makes their selling decisions easier such as fixed price, increased flexibility, or low

requirements. Other producers seem to need a channel to be more beneficial for them to join such as higher than average prices or lower costs, or increased information. This difference seems to relate to the producers ability to deal with uncertainty. The literature has illustrated that there are several different methods possible to use to examine a producers selling decision making process.

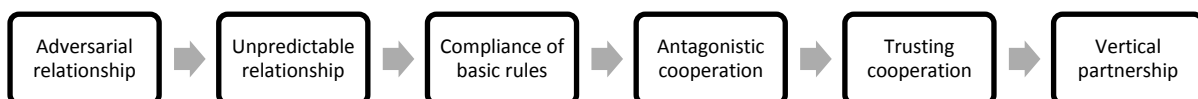
## 5. Supply Chain Relationships

Previous sections of the literature review have covered the producers marketing strategy and then linked this to the choice of supply chain channel. An approach to influence producers' behaviour may be through the supply chain relationships and level of collaboration. This section explores differences in the nature of supply chain relationship, and subsequently the potential influence of relationship behaviour and quality on producer behaviour.

### 5.1 Vertical coordination

The quality of relationship between producers and processors plays an important role in reducing transaction costs and increasing the level of coordination between participants in the supply chain. Producers' decision-making is conducted within an environment shaped by economic, social, legal, logistic and natural factors. A key part of decision-making for firms, such as farm businesses, is who they decide to interact with in external relationships and the nature of these relationships. These decisions include which company to sell livestock to, price structures, livestock weights and sales timing, and the extent of their involvement in further supply chain operations.

Vertical coordination in business can be defined as “the alignment of direction and control across segments of production and or marketing systems” (King (1992) in Ferto and Szabo (2002)). In agri-food chains this refers to the means by which products move through the supply chain from producer to consumer (Young & Hobbs, 2002). Firms can make different coordination choices with other firms, along a continuum of options, which have been defined in different ways by scholars. An example is illustrated below (Schulze & Spiller, 2006).



**Figure 2.2: Classification of Business-to-Business relationships in terms of trust and conflict.**

**Source: Schulze and Spiller (2006).**

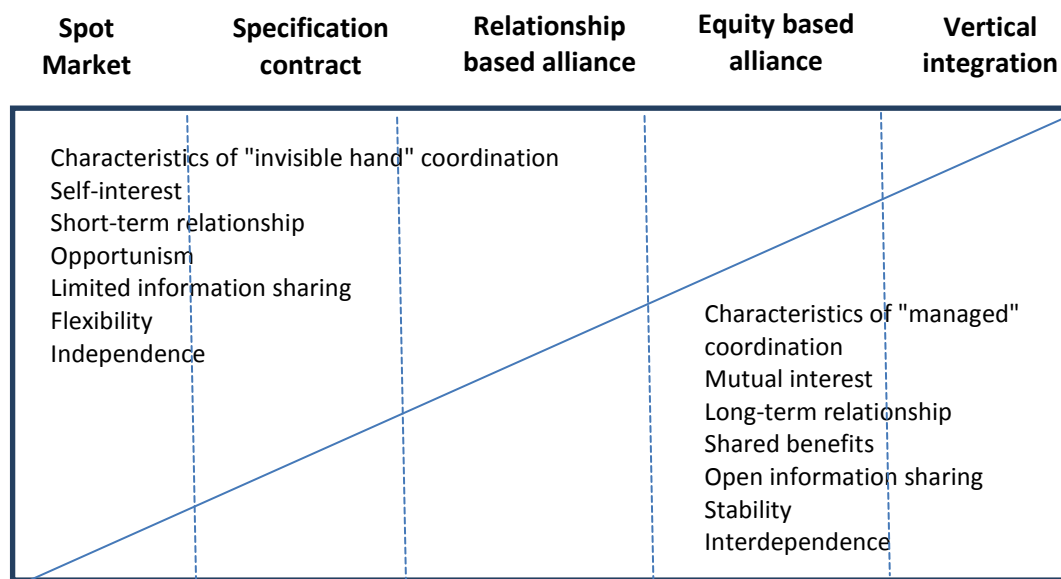
Closer vertical coordination in agriculture has occurred as the use of ‘spot markets has declined, while production and marketing contracts, franchising, strategic alliances, joint ventures, and full vertical integration has increased’ (Young & Hobbs, 2002, p. 428). This move has in part been driven by changing consumer preferences, regulations, industry consolidation, and the emergence of global retailers. Such change has had varying impacts on primary producers and agribusiness governance structures around the world, with increased consolidation and contracting in some industries such as pork and poultry, dramatically changing the governance of how food is produced.

Williamson (1998), one of the pioneers of the transaction cost approach initially proposed two different governance structures of spot market and hierarchy, later adding in hybrids that took on elements from both dichotomies (Trienekens & Beulens, 2001). Fischer, et al. (2008) built on this

concept to categorise two relationship types of formal and non-formal. Non-formal types include spot market transactions which are immediate at actual prices, or repeated market transactions with the same buyer with non-formal, non-written contracts. Formal relationship types include written bilateral contracts with terms and obligations legally enforceable, or financial participation arrangements where both parties stay legally independent entities (Fischer, et al., 2008).

Differences in exchange transactions such as spot markets, contracts, relationship-based alliances, equity-based alliances and vertical integration (Peterson, Wysocki, & Harsha, 2001), or spot market versus informal long-term relationships, marketing and production contracts, contract farms, and vertical integration (Schulze & Spiller, 2006) are considered. The model developed by Peterson, et al., (2001) based on previous studies posited that vertical coordination can be defined based on 'the intensity of control that alternative strategies employ to assure that proper coordination occurs' (Wysocki, Peterson, & Harsh, 2006, p. 176). Coordination strategies can move from low levels of ex ante control (spot markets) to high levels of ex post coordination control (vertical integration) with several option in between (Wysocki, et al., 2006) (Figure 2.3).

There can be several different factors on which to base the definition of the level of integration in a supply chain transaction. These can be related to tangible factors such as written contracts, visible sharing of information or intangible factors such as the strength of relationships, level of goodwill and understanding of each other's business and amount of joint problem solving. While the literature often groups the types of transactions, the specifics of these groups appear to differ depending on the nature of the industry.



**Figure 2.3: Strategic Options for Vertical Coordination**

Source: Wysocki, et al., (2006)

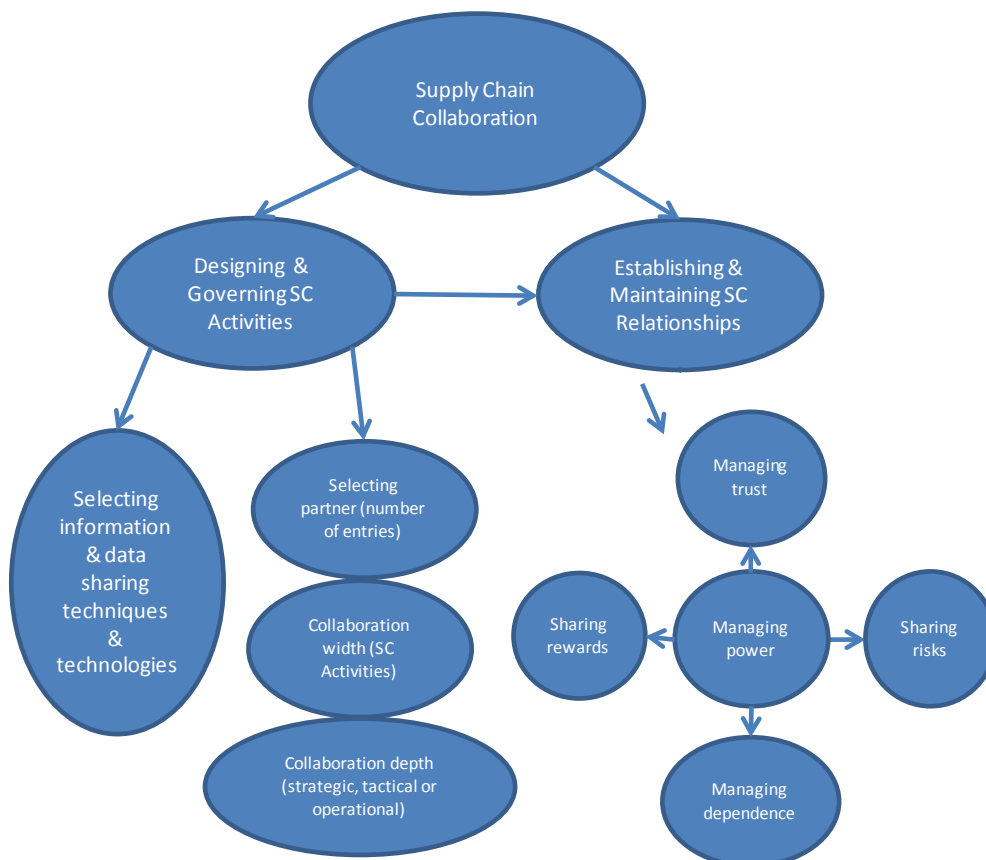
## 5.2 Business to Business relationships

When looking to assess the decisions made by producers within the agri-food supply chain it is useful to consider the concept of business-to-business relationships. When considering the farm and other parties within the agri-food supply chain as firms, the interaction between the two firms can be studied in a similar way to any other business-to-business interaction. Transactions between businesses are often governed on a long-term basis, and as such, the object of exchange becomes just one determinant of the relationship success (Ivens, 2004). While product and financial exchange

‘comprise the content and the process of the core aspects of exchange transactions, social and information exchange are concerned with sociological aspects of economic relationships’ (Ivens, 2004, p. 300). Relational behaviour is a multi-dimensional construct made up of both “hard” and “soft” factors (Ivens, 2004). “Hard” factors such as quality and price will affect relationships, but also the “soft” factors such as communication and trust. Similar to a customer choosing and evaluating relational exchanges, so too will a producer on one side of a buyer-supplier exchange choose and evaluate that relationship. Relational behaviour has previously been studied in order to assess which facets of supplier behaviour influence the customers evaluation of the relationship (Ivens, 2004). While the results of some of these empirical studies are discussed in more detail in a later section, this concept can be applied directly to the assessment made by producers of their exchange with buyers. Of interest in this study, is the effect the evaluation of the relationship has on supply channel choice. Particularly what, if anything, is different about relationships for those that do and do not commit.

### 5.2.1 Benefits and risks of collaboration

Within any business relationship, there can be reasons for, and risks associated with, closer collaboration. There will also be internal and external factors that drive or prohibit closer collaboration between firms. Collaboration ‘appears as enterprises recognise the cases where working and operating alone is not sufficient to resolve common problems and to achieve the desired goals’ (Matopoulos, Vlachopoulou, Manthou, & Manos, 2007, p. 178) These concepts can be incorporated into the agri-food supply, which can be characterised by certain factors that limit or enhance collaboration opportunities.



**Figure 2.4: An overall framework of the supply chain collaboration**

Source: Matopoulos, et al., (2007)

Collaboration within supply chains is not always easy to achieve, even with improved technology and communication due to high time and effort requirements (Matopoulos, et al., 2007; Zanquetto-Filho, Fearné, & Pizzolato, 2003). The concept of supply chain collaboration can be illustrated in the below diagram based on existing relevant literature (Figure 2.4). Two pillars are distinguished with one dealing with the design and governance of supply chain activities, and the other with the establishment and maintenance of relationships (Matopoulos, et al., 2007). This illustrates that supply chain collaboration is a complex activity that involves many decisions over time.

Reasons for closer coordination and collaboration between firms have been researched extensively. Matopoulos, et al., (2007) describe initial benefits that include a simple drive towards cost reduction or increased revenues which contribute to the decision between collaborating with Firm A versus Firm B (Matopoulos, et al., 2007). They then identify a more activity-based approach where for each activity collaboration benefits are identified. Activities can include procurement, inventory management, product design and new product development, manufacturing, transport and distribution, sales, demand management, and customer services.

From a review of the literature, Zangeutto-Filho, Fearné & Pizzolato (2003) found four types of benefits widely attributed to partnerships in the supply chain including cost efficiency and asset utilisation, customer service improvements, marketing effectiveness, and profitability and sales growth. Gray, Boehlje, & Preckel (2006) explored four key objectives from closer coordination. These were efficiencies, synergies, inter-firm pooling of resources, customer responsiveness, and risk sharing.

Certain benefits can be adapted to producer activities and decisions that are made in relation to choice of supply chain channel. Interactions with meat companies to determine customer requirements for livestock supply such as timing of sales and carcass weights can increase efficiencies and customer responsiveness. There may also be more medium to longer term factors such as genetics, carcass confirmation or methods of production such as organics. Closer vertical coordination can allow quicker response times to dynamically changing consumer needs (Gray, Boehlje, & Preckel, 2006). In more collaborative relationships, producers may enter into more information and cost sharing with supply partners or joint ownership finishing of livestock. This may include a producer providing details on expected livestock supply numbers and dates, with processors providing information on expected or fixed prices. The ability to manage risks such as price, quantity, and quality and well as food safety risks is another benefit of coordination (Gray, et al., 2006).

While benefits are the motivation, there will also be risks associated with closer collaboration. Matopoulos, et al., (2007) was the only study to consider the risks of increased collaboration. Risks can be associated with the failure of collaboration including loss of invested time and money, exposure to competition if collaboration fails, increased dependence on the other party especially if there is a power imbalance, and increased operational complexity (Matopoulos, et al., 2007). New Zealand sheep producers and processors may perceive similar types of risks from increased collaboration and will make decisions based on the balance of perceived benefits and risks of each option.

### **5.2.2 Enablers and barriers to collaboration**

In addition to benefits and risks, there will be internal and external enablers and barriers to collaboration between supply chain partners. Individual firm competencies, processes and practices were shown to have an important role in the success of collaboration between firms (Cox, 2004; Zanquetto-Filho, et al., 2003). Drivers of collaboration can include effective communication, joint cost measurement and control, business culture and shared strategic orientation, and innovative

capability (Zanquetto-Filho, et al., 2003). Identified barriers to increased collaboration include a ‘lack of capability and competence internally or non-conducive power circumstances externally’ (Cox, 2004, p. 353). In addition, if buyers and suppliers misperceive circumstances and pursue an inappropriate relationship style, then given the internal and external power circumstance it may be destined to fail (Cox, 2004). This could be the case in the New Zealand sheepmeat industry where a misalignment of buyers and suppliers perceptions results in limited uptake of certain supply programmes or options (Clare, et al., 2005; Ministry of Agriculture and Forestry, 2009).

A second set of factors that influence the extent of collaboration are external to the firms including the existence of global retailers, industry consolidation, and stricter consumer attitudes, regulations and laws regarding food production (Matopoulos, et al., 2007). The first set of enablers are more relevant to this study as it relates more directly to the individual competencies and goals of producers when choosing different supply channel options.

Matopoulos, et al. (2007) tested conceptual frameworks and attempted to determine the factors that influence the intensity of supply chain collaboration. The authors explored the role of industry macro and micro factors on the intensity of collaboration. Macro factors relate to the external environment of the sector including trends and changes such as globalisation and consolidation, changing consumer consumption attitudes and stricter regulations and laws regarding food safety and production. These macro-factors are proposed to ‘enhance the design and government of supply chain relationships by enhancing the intensity of supply chain collaboration.’ (Matopoulos, et al., 2007, p. 180).

Micro factors affect the width and depth of collaboration and relate to specific internal characteristics such as product specification, processes and industry structure. It was proposed that due to time constraints and uncertain production factors, micro factors will limit the depth of collaboration from strategic decisions to tactical or operational in order to avoid the risks of long-term decisions (Matopoulos, et al., 2007). Additionally a relationship was tested between the products’ characteristics of price and supply volatility on the trust building process and the intensity of collaboration. This argument reflects the situation where changes in product supply (such as adverse weather events) will put pressure on prices demanded or offered. These pressures affect the trust building process as parties seek to maximise short term returns thus weakening the collaboration process. Finally the issue of power imbalances within the industry were addressed through testing the relationship between power asymmetry, dependence, risk-reward sharing, trust and collaboration intensity (Matopoulos, et al., 2007). This issue is relevant in the New Zealand sheepmeat industry where dynamic and changing power balances are argued to decrease interdependence and reduce collaboration.

Matopoulos, et al. (2007) used a single case study of two large companies involved in agri-food production in Greece to allow for an exploratory approach into insights into supply chain collaboration. The study explored the collaborative relationship between the biggest food processor in Greece, and a family based company which has become the processors largest supplier of fresh vegetables. The interviews covered general company information, sector characteristics, and changes and developments in the specific supply chain. Then the relationship between the two companies was explored including reasons for collaboration, advantages and disadvantages of the relationship, problems encountered, conflict resolution, power imbalances and dependencies, risk and reward sharing and trust. Results found that changing consumer consumption attitudes and greater competition did affect the collaboration. Changing consumer tastes towards increased demand for vegetables led to the start-up of collaboration between the two companies, and increased competition led to a rationalisation of the processors supply base to ensure product excellence (in terms of quality



and quantity) and process excellence (in terms of costs and time reductions) (Matopoulos, et al., 2007, p. 183). Globalisation and stricter food regulations and laws did not play an important role in enhancing the intensity of collaboration in this case study.

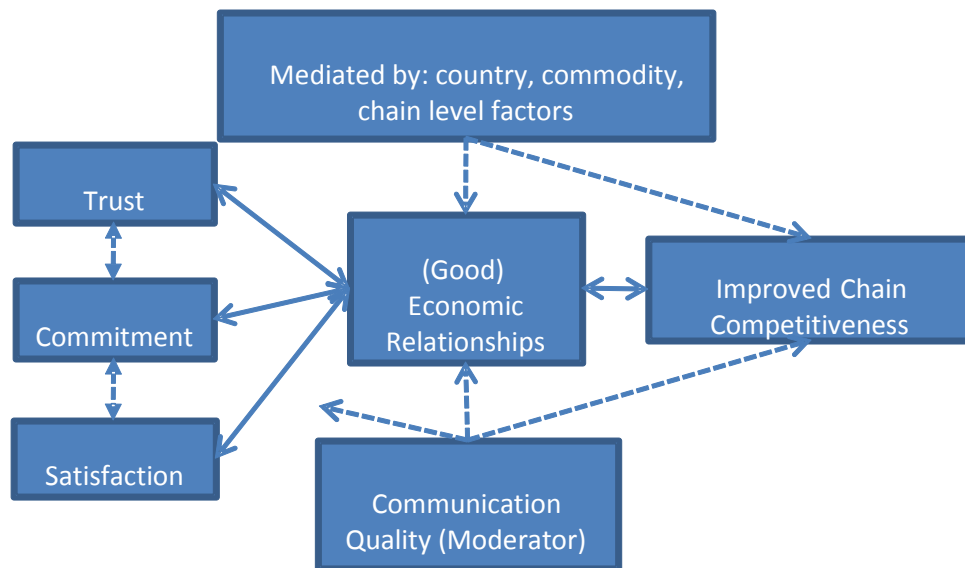
Sector-level variables were also investigated in the analysis of relationship sustainability by Fischer, et al., (2008) and included market competition, success uncertainty in the market, and the existence of traceability requirements (Fischer, et al., 2008). However, no sector-specific variables had a statistically significant impact on relationship sustainability.

The studies highlight that sector specific factors such as volatility in price and supply which are outside the control of each party, may limit the ability of closer collaboration in agri-food supply chains. These factors often limit the ability for supply chain collaboration beyond tactical or operational factors, regardless of the desire of those involved or what may be regarded as best practice in other industries.

Moreover, the extent of collaboration may be influenced by the popularity of collaboration within the latest business management frameworks. Concepts from a study analysing the choice of sourcing relationships for buyers (Cox, 2004) can also be used to analyse suppliers choice of selling solution. Historically buyers were encouraged to use 'balanced sourcing' which involved segmentation of suppliers by using either short term competition or long-term collaboration, when most appropriate, to achieve desired goal. This was countered by the emergence of the Japanese style of management thinking into Western business practice, especially in relation to car manufacturing. This style focused on using more transparent, equity-based, long-term collaboration or "lean thinking." Arguments against this view proposed that such an alliance was not always possible due to the uncertainty and variability in demand that exists in certain industries, and that a more agile and responsive approach was sometimes necessary. While aiming for a "win-win", this approach was said to often be characterised by buyer dominance resulting in the supplier passing any increase in value to the buyer (Cox, 2004).

Fischer, Gonzalez, Henschion, and Leat (2007) summarised in Figure 2.6 some of the overall issues emerging from literature that can influence the success of economic relationships focusing on the socio-cultural, organisational collaboration and the business environment. Many of the relationships are mutually reinforcing (Figure 2.5). In a subsequent study, Fischer, et al. (2008) looked to analyse the factors that impact the choice of interaction type between parties (formal versus non-formal exchanges) as well as the levels of sustainability within inter-enterprise relationships and the main determinants of sustainable relationships in different agri-food chains in Europe (Fischer, et al., 2008). While relationship quality covers the static components such as trust, commitment and satisfaction, sustainability of a relationship covers dynamic aspects. It may be measured by the existence of mutual dependence, existing degree of conflict resolution mechanisms, and the collaboration history with a business partner (Fischer, et al., 2008).

The study conducted a review of existing literature on sustainable business relationships, followed by a pilot study involving interviews with experts on business relationships in agri-food chains. The findings provided evidence that 'cultural, economic, and social determinants are considered vital for the choice as well as the success of agri-food relationships' (Fischer, et al., 2008, p. 3). An empirical study was carried out to test the hypothesised relationships between sector-level and enterprise-level variables on the choice of relationship type, and the determinants influencing the sustainability of economic relationships. Results from this study are covered in section 5.3 Supply chain relationship.



**Figure 2.5: The role of trust in Agri-food chain.**

Source: Fischer, et al. (2007), pg.41

### 5.2.3 Summary of vertical coordination and business to business relationship

These concepts indicate that there are many factors to consider when investigating relationships in agri-food supply chains. This section reinforces the importance of considering the transaction of a producer selling livestock as a relational exchange within a wider supply chain delivering food to end consumers. Given the repeated nature of transaction within livestock production, the nature of the relationship between a producer and buyer will have fundamental influence on the producers' behaviour and choice of channel. Moreover, different types of relationships will suit different types of producers, and there will be no single best form of relationship.

The literature highlights that collaboration is not always successful or easy to achieve. Closer collaboration has been touted as the solution to many issues in the New Zealand meat industry. Greater certainty in prices for producers, and guaranteed supply of livestock to processors are two of the main arguments for closer coordination such as supply contracts (KPMG, 2011; McDermott, Saunders, Sinclair, et al., 2008; McDermott, Saunders, Zellman, et al., 2008; Ministry of Agriculture and Forestry, 2009). Certainty in prices can enhance budgeting and planning on-farm and reduce market risk if prices decreased. Other risks may increase such as the potential for market prices to strengthen above contracted prices, and extra requirements on producers to meet supply conditions. Excess capacity within the meat processing sector increases the value to companies from certainty in livestock supply numbers. This enhances processing chain efficiencies and enables companies to guarantee customer requirements.

The sheepmeat industry is an industry characterized by uncertainty and variability and the argument that responsiveness and agility is needed could help to explain why closer collaboration between buyers and suppliers has not been widely adopted (Ministry of Agriculture and Forestry, 2009). Background into the concepts and frameworks around supply chain collaboration including the perceived benefits, risks, drivers, and barriers are useful to contextualise the producer's supply chain decision. The lack of a common goal between producers and processors may be an issue that is hindering greater collaboration. The industry may need to better acknowledge and respond to industry factors that are barriers to collaboration. Collaboration could be useful to influence behaviour as once parties are working closer together, there may be more potential to change

behaviour. Acknowledgement that collaboration will not always work and that it requires effort is also required. In response to this benefits of collaboration must be determined and portrayed effectively to all parties.

### 5.3 Supply chain relationship quality

The following section summarises the results of studies that have looked at supply chain relationship quality and sustainability, the factors affecting relationships, and how this may impact on the choice of supply chain channel. While playing an important role in a much wider industry providing food to consumers around the world, producers often deal with a very limited number of buyers, and often the intensity and strength of these relationships can have a large impact on producers marketing activities.

Studies have attempted to measure the levels of quality within different types of supply chain relationships, factors that affect relationship quality, and what features are most important to successful relationships (Clare, et al., 2005; Fischer, Gonzalez, Henschion, & Leat, 2007; Fischer, et al., 2008; Ivens, 2004; James & Sykuta, 2006; Kwon & Suh, 2004; Matopoulos, et al., 2007; Schulze & Schlecht, 2009; Schulze & Spiller, 2006; Theuvsen & Franz, 2007).

#### 5.3.1 Factors that influence relationship quality

The literature on relationship quality can be grouped in either influenced by a party's relationship behaviour or the perceptions of one party about the other.

##### a. Behaviours

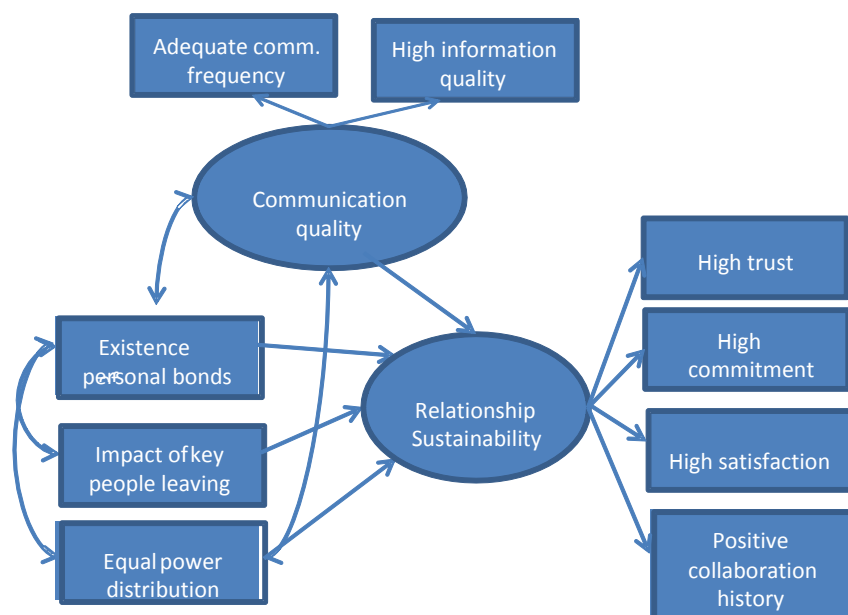
Ivens (2004) considers the impact of relational behaviour on relationship quality. The author evaluated the impact of different facets of professional service provider's behaviour on customer satisfaction. The study aimed to analyse the relative impact of ten relational behaviours based on the existing relationship quality literature, in order to discover whether certain behavioural factors are more or less important. This would then provide managers with information to decide which behaviours to focus on to attract and keep customers. Ivens (2004) developed a list of dimensions of relational behaviour and relationship quality from previous literature on relational exchange. These were long-term orientation, role integrity, relationship planning, mutuality, solidarity, flexibility, information exchange, conflict resolution, restraint in the use of power, and monitoring behaviour. Every dimension refers to a potential behaviour and specifies what aspects a customer considers when evaluating a supplier's behaviour (Ivens, 2004). The research assumed that 'the customer's perception of the supplier's relational behaviour has an impact on the customer's perception of relationship quality.' (Ivens, 2004, p. 301). Relationship quality is constructed from the three variables of satisfaction, trust and commitment (Ivens, 2004). Satisfaction is measured by the economic outcomes that flow from the relationship and the psychological aspects of the relationship (Ivens, 2004).

Ivens (2004) surveyed members of a German market research association who are responsible for purchasing market information in their companies. Participants were questioned on one particular supplier relationship. As it was the first time all ten variables had been tested together, the study was deemed exploratory and hence no hypothesised relationships were provided, other than that 'a positive link exists between relational behaviours and relationship quality (Ivens, 2004, p. 303). Results showed that economic relational satisfaction is influenced by role integrity ("maintenance of complex multidimensional roles forming a network of relationships") and flexibility ("the actor's readiness to adapt an existing implicit or explicit agreement to new environmental conditions"). Social relational satisfaction is influenced by role integrity and mutuality ("the actor's attitude that the realisation of one's own success passes through the partners' common success"). Trust is also

influenced by role integrity and mutuality. Commitment is influenced by solidarity (“preservation of the relationship, particularly in situations in which one part is in a predicament”) and long-term orientation (“the desire and utility of an economic actor of having a long-term relationship with a specific exchange partner”) (Ivens, 2004).

Role integrity plays an important role in both facets of satisfaction and trust. This reflects the importance of actors following through with their obligations to a level expected by the other party (Ivens, 2004). This feature is particularly important in many agri-food supply chains where transactions are based on verbal and informal exchanges without contracted specifications. Flexibility measures the readiness of the other party to adapt to changed environment conditions. This is important within the agri-food sector, where prices can be volatile due to rapid changes in supply and demand situations. Mutuality reflects the idea that in the end benefits will be fairly distributed between parties, even if this may not always be the case in the short term. This concept stems from the belief that in mutual relationships one party will not try to benefit at the expense of the other. Solidarity relates to the demonstration of level of importance one party attributes to the relationship with the other. This may include factors such as level of friendship, or going out of the way to help the other party. Long-term orientation is the second factor influencing customer commitment and relates to attitudinal perceptions of the customer about how interested the other party is in long-term cooperation.

These results show that five of the ten variables considered did have an impact on relationship quality, either through satisfaction, trust or commitment. Some of the factors had an influence on at least two of the constructs. While identifying the factors that influenced relationship quality overall, this study did not take the next step of assessing whether there are differences between values of different segments of customers. The concept of a relationship quality assessment by customers of service providers can be transferred to the relationship between producers and processors.



**Figure 2.6: Determinants of relationship sustainability.**

Source: Fischer, et al. (2008) pg. 9

Fischer, et al. (2008) compared factors influencing the choice of relationship, but also the sustainability of relationships in meat and cereals supply chains in six European Union countries. Two types of variables were investigated being relationship specific and at the sector level. Variables

specific to the relationship with the most important buyer or supplier included communication, whether contracts were used, existence of personal bonds, equal power distribution, and key staff leaving. Variables found to have an impact of relationship sustainability are illustrated below (Figure 2.6). Good communication was found to be the most important factor in relationship sustainability, followed by the existence of personal bonds and equal power distribution. These three factors are also positively and significantly correlated with each other. The most important components of the relationship sustainability construct were satisfaction and trust (Fischer, et al., 2008).

Schulze and Schlecht (2009) analysed the role of intermediaries in the agri-food supply chains. Factors analysed that could affect the quality of supply chain relationships were internal and included the level of producers' price orientation, price satisfaction, desire for channel flexibility, level of independence, and level of loyalty (Schulze & Schlecht, 2009). This study found that price orientation was the most important variable to producers, and was assessed by questioning producers as to the extent it did not matter who they sold to, as long as the price was right.

### **b. Perceptions**

Differences in perceptions between producers and buyers have been assessed by several studies (Clare, et al., 2005; Theuvsen & Franz, 2007). Theuvsen & Franz (2007) found that there was a perception gap between the beliefs between traders and suppliers on the required role of traders and level of service provided. The cooperatives and livestock traders scored themselves higher than the supplier did in all areas: importance of the organisation if meat is branded; the ability to better pool livestock and achieve higher prices; the need for cooperatives for smaller producers; offering a broad spectrum of services to members; having small member fees; being a good way to cooperate with other producers; and being important for meeting market requirements (Theuvsen & Franz, 2007).

Clare, et al. (2005) found that perception gaps exist between producers and both livestock buyers and their meat processing companies. Variables investigated include perceptions of trust, commitment, symmetry of respect and rewards, interdependence, information quality and sharing, joint problem solving and planning, cultural compatibility, and coordination of work. This study found that suppliers perceive a closer relationship with their buyer agents than with the company. It also showed that suppliers perceive lower switching costs to changing buyers or companies, than buyers or companies perceive about suppliers. Differences were also found between perceptions about relationships with buyers and companies based on size of farm, and length of time supplying. Those who had supplied buyers for a short time were found to be happier with the relationship, than those who had supplied a company for a longer time. Larger farms were found to have a closer relationship with buyers, but size was not found to have much of an impact on company relationships. Clare, et al. (2005) is particularly relevant to the current study as it deals with the same producer population.

### **5.3.2 Trust**

One of the factors analysed most widely within the supply-chain relationship framework is the concept of trust. Trust between parties is expected to increase relationship performance by increasing information sharing, decreasing behavioural uncertainty and thus transaction costs. Trust supports commitment and improves cooperation and communication (Theuvsen & Franz, 2007). Trust has more recently been brought into the transaction cost approach, with trust being a variable expected to lower transaction costs.

When defining the concept of trust, scholars tend to mention actions based on the beliefs or perceptions of the actions of other parties. This includes the 'expectation that one would not be exploited by another' based on the perceptions of the motivations and competence of the other party (James & Sykuta, 2006, p. 136) the belief that the other party will 'take action in accordance with

stated intentions resulting in predicted positive outcomes' (Clare, et al., 2005, p. 4) and the 'willingness to take risks' (Kwon & Suh, 2004, p. 5). Furthermore, trust is a 'reflection of the anticipated gains that can result from correctly trusting and the losses that can arise when trust is misplaced' (James & Sykuta, 2006, p. 137). This illustrates how the importance of trust will vary depending on the situation and the need for one to place their trust in another party.

When measuring trust, different constructs are still being developed. While some studies just ask respondents to rate their overall perceptions of trust in the other party (Schulze & Spiller, 2006), others attempted to use a more considered measure of trust. James and Sykuta (2006) measured trust by asking producers to measure the extent they believed the buyer of their product would be stay within the terms of the agreement. Kwon and Suh (2004) used a measure of trust consisting of ten items, five of which assessed the extent to which the partner is honest truthful and reliable and another five measuring the respondent firms belief that the partner consider the firms interest or welfare.

#### **a. Factors affecting level of trust**

It would seem that the level of trust is intrinsically linked to the level of transaction costs. All of the studies that attempted to measure antecedents of trust found that the factors that impact trust are similar to those that influence the costs of transaction. These include the asset specificity, duration of relationship, sharing of information, transparency, power imbalances, opportunism, and fairness (Fischer, et al., 2007; Kwon & Suh, 2004; Schulze & Spiller, 2006).

Conceptual models of determinants of trust were theoretically developed and then empirically tested. Kwon and Suh (2004) surveyed members of supply chain organisations in the United State involved in supply chain and logistics management. Schulze and Spiller (2006) measured the level of trust and its antecedents for producers within the German pork industry. Schulze and Spiller (2006) used a disaggregated model in order to sharply identify and distinguish the determinants of trust. Fischer, et al. (2007) used existing literature and data as well as face-to face interviews with industry experts (rather than agribusiness firms and producers themselves) to review and evaluate eight different agri-food supply chains within Germany, Ireland, Spain, and the United Kingdom. Selected food chains were barley to beer, cattle to beef, pig to pork, cured ham and sausages, and cereals to bread (Fischer, et al., 2007).

Determinants of trust tested included transaction costs variables of asset specificity, behavioural uncertainty and the effect of information sharing on behavioural uncertainty (Kwon & Suh, 2004), as well as goal compatibility, communication, opportunism, reliability, and power balance, which are also linked as factors that can increase or decrease transaction costs (Schulze & Spiller, 2006). Other variables of perceived satisfaction, partner's reputation, and perceived conflict were also tested for the effect on trust (Kwon & Suh, 2004). Similarly management competence, enterprise performance, price satisfaction, and image/reputation were assessed indirectly through the construct of satisfaction that also was assessed as a determinant of trust (Schulze & Spiller, 2006). The effect of relationship duration was assessed both directly and indirectly through satisfaction (Schulze & Spiller, 2006). Opportunism was measured with sector specific items such as neutrality of carcass grading and transparency of pricing. Communication factor includes both communication quality and frequency. The competence and reputation of the other partner are also considered, along with any effects of power asymmetries within the industry (Schulze & Spiller, 2006). The potential influence of social, cultural, economic, and political factors on economic relationships and communication was assessed in the study of European agri-food chains (Fischer, et al., 2007).

Asset specificity refers to "investments in physical or human assets dedicated to particular business partner and whose redeployment entails considerable switching cost." Behavioural uncertainty is the

“inability to predict partners behaviour or changes in the external environment” (Kwon & Suh, 2004, p. 6). Both of these factors were shown to decrease trust. Information sharing lowered behavioural uncertainty and indirectly increased trust. Trust was shown to increase if there is a mutually satisfactory outcome that partners can share, if the supply chain partner enjoys a high and credible reputation, and if there is a low perception of conflict. There was a circular relationship between trust and information sharing and trust and asset specificity. Trust can be both the antecedent to and the consequence of asset specificity, and similarly information sharing will be increased in trusting relationships (Kwon & Suh, 2004).

Satisfaction was found to be the most influential factor on trust (Kwon & Suh, 2004). Relationship duration had the strongest influence of the level of satisfaction, followed by levels of power abuse. This linked in with transaction costs economics, where transaction costs are said to decrease over time, in line with decreased uncertainties. Price satisfaction did not have as large an effect on overall satisfaction as expected. Neutrality of grading was the second most important factor affecting trust, and could play such an important role due to the relationship between grading and price received. This illustrates again the link to transaction costs, and the effect that decreasing uncertainties and the chance for opportunism can have on lowering transaction costs and therefore increasing trust.

The factor of ‘Producer Orientation’ and perceived fairness had similar influence of trust. Producer orientation captured the goal compatibility and benevolence of the buyer, understanding of producers’ problems and complaint management (Schulze & Spiller, 2006). Other factors had minor or insignificant relevance for trust levels. The regression model explained 62 per cent of the variance in trust and this could be due to differences in individual disposition to trust or critical past events that have led to disruptions in relationships not covered by questions used (Schulze & Spiller, 2006). Schulze and Spiller (2006) also found a high correlation between the level of trust and switching behaviour which confirms the role that trust plays in building more stable relationships, especially in industries characterised by arm’s length transactions.

From the study of European agri-food chains, the cattle to beef chains in the United Kingdom and Ireland are of most relevance to this study (Fischer, et al., 2007). In Ireland, new supply chains are emerging in which producers need asset specific investments such as housing or feeding equipment. While this increased investment should in theory result in more contractual relationships, switching costs remain low enough that contractual relationships are not emerging. In the United Kingdom, considerable mistrust between producers and processors is reported, centred on price. Factors that play a part in the generation of mistrust in these and the other supply chains considered include price pressure in competitive trading environment, lack of transparency in quality achieved and therefore price consequences, and an imbalance in the scale and market power between producers and downstream supply chain participants (Fischer, et al., 2007).

This study highlights how a lack of trust can increase transaction costs, as without trust producers will not commit to a particular supply chain even though they have made specific investments. This relates to a study that found a circular relationship between trust and asset specific investments (Kwon & Suh, 2004). While asset specific investments may need to be made, if there is a lack of trust, producers will not commit. This would indicate that there are other factors that decrease trust as mentioned above that prevent a producer from safeguarding investments. If a lack of trust already existed, asset specific investments would then seem to increase this level of distrust. Conversely, if a high level of trust already existed, this could be increased through asset specific investments that further decreased uncertainty.

### 5.3.3 Commitment

The concept of commitment or loyalty is especially relevant to decision making. When commitment to a certain solution is high, other factors may be of little relevance. Some producers may be selling into a certain channel because that is what they have always done. It could be through commitment or loyalty or it could be due to a lack of desire to change. Kwon and Suh (2004) assess the relationship between trust and commitment and use the Morgan and Hunt (2004) definition of commitment as “an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship endures indefinitely” (Kwon & Suh, 2004, p. 5). A lack of trust is proposed to reduce relationship commitment. Kwon and Suh (2004) test the existence of a positive relationship between trust and commitment within members of United States logistic and supply chain management organisations. Results found that there was a positive and significant relationship between the level of trust and the degree of commitment. However it is unclear whether trust leads to commitment, or commitment leads to trust.

A study grouping German pig and cattle producers by their marketing behaviour found that some producers are distinctly more committed to selling channels than others (Schulze & Schlecht, 2009). A cluster analysis found that four out of the eight identified clusters can be classified as hard to bond due to dissatisfaction and a strong desire for flexibility in choosing the marketing channel. Producers differed between groups based on how satisfied they are with their current selling channel, how willing they are to switch channels, and how price oriented they are.

### 5.3.4 Summary of supply chain relationship quality

Relationship behaviour of both parties is important and successful relationships cannot be taken for granted. Processors must find out what different producers value in the relationship. Trust and commitment are related, and seems to be based on the producer’s beliefs. However beliefs are founded on actions. Relationship quality was found to be influenced most by internal dyadic factors either relating to the preferences of the one party, and/or their perceptions of the attributes of the other party.

## 5.4 Summary of supply chain relationships

The quality of relationships plays an important part of all business transactions and will be affected by several factors that can include wider macro factors, sector specific and personal factors. Some literature concluded that relationship status is merely a consequence of the type of exchange transaction along a continuum of levels of integration between supply chain participants (Ferto & Szabo, 2002; Fischer, et al., 2008; Peterson, et al., 2001; Schulze & Spiller, 2006; Williamson, 1998; Wysocki, et al., 2006; Young & Hobbs, 2002). The closeness and importance of the relationship is determined as a function of the level of integration, ranging from arms length transactions to full vertical integration. The literature suggests that high quality, long-term, collaborative relationships increase the more integrated the supply chain transaction. Spot market transactions are considered to have a low level of relationship quality due to the arms length, adversarial nature of the transaction.

Other literature views the transaction between producers and processors as similar to other business-to-business relationships, whereby industry and environment specific factors will influence the benefits, risks, enablers and barriers to increased integration (Gray, et al., 2006; Ivens, 2004; Matopoulos, et al., 2007; Zanquetto-Filho, et al., 2003). Collaboration is driven by the recognition by both parties that collaboration makes sound business sense such as reducing costs or attempting to increase value. Only one study highlighted that there were also risks involved in increased



collaboration (Matopoulos, et al., 2007). Individual firm factors, as well as external industry factors including country, commodity, and supply chain can either encourage or hinder collaboration (Cox, 2004; Fischer, et al., 2007; Matopoulos, et al., 2007; Zanquetto-Filho, et al., 2003).

Further studies have looked at the factors that impact the overall quality of relationships rather than what factors influenced, or were influenced by, the nature of the transaction and level of integration (Clare, et al., 2005; Fischer, et al., 2008; Ivens, 2004; Schulze & Schlecht, 2009; Theuvsen & Franz, 2007). These studies attempted to empirically measure the quality of different relationships and the factors that played the largest role in relationship quality. Preferences that influenced relationship quality included price orientation, independence, flexibility, loyalty and long-term orientation (Ivens, 2004; Schulze & Schlecht, 2009). Attributes of the other party that influenced quality included integrity and level of mutuality (Ivens, 2004). Studies also highlighted the differences in perceptions of relationship quality that often exists between the two parties (Clare, et al., 2005; Theuvsen & Franz, 2007).

The importance of dyadic variables such as trust and commitment on relationship quality led to further investigation of the antecedents for these factors. Several studies have investigated how to measure the level of trust in supply chain relationships, and what factors have the largest influence on trust (Fischer, et al., 2007; Kwon & Suh, 2004; Schulze & Spiller, 2006). A connection between variables that affect transaction costs and variables that affect trust was discovered. The level of commitment was also found to have an impact on marketing channel behaviour.

The choice of supply channel may be affected by the relationship quality. Different types of participants will be attracted to different supply channels based on relationship factors such as levels of communication, sharing of goals, and trust. However little research has looked at how relationship factors may contribute to the choice of certain channels. Producers' marketing activities involve different types of relationships, and whether they are long-standing formal relationships or informal, and infrequent, they will be closely connected to the choice of selling channel.

## **6. Conclusion and Gaps in the Literature**

### **6.1 Summary of the literature**

The literature concludes that producers differ in their strategic orientation based on attitudes towards the importance of marketing as a function of their business, and the degree of stability versus flexibility they desire. The literature also seems to conclude that differences in human characteristics impact how producers' perceive features of different available marketing channel options. These could be related to lowering the costs of transaction, but it would seem that the perceived costs of transaction differ for producers. Therefore different marketing channel options, rather than solely increasing the level of contracting and integration, may provide the ability to lower the transaction costs that different producers perceive as being most problematic. It is unclear whether the type of relationship has an impact on channel choice, but it seems that closer relationships and collaboration play a role in reducing transaction costs. Relationships are a critical part of developing collaboration in supply chains. Trust can be built from actions which may overcome existing barriers to collaboration, but only if benefits can be seen.

### **6.2 Gaps in the literature**

None of the studies have explicitly referred to the idea that the costs of transaction may differ for each individual depending on their perceptions of the different transaction costs for each option. These perceptions may be influenced by the individuals own ability and resources, including their own

human characteristics being their desire for opportunistic behaviour, their ability to search for and process information, and their differing levels of bounded rationality. These factors may have just as large an impact on the choice of channel as the transactional characteristics of uncertainty, asset specific investments and frequency, yet this has not been explicitly explored in the literature. In addition there is little analysis combining a wide range of factors in decision making such strategic orientation, producer attitudes, demographics and relationship variables.

In the New Zealand lamb industry context there are no stark differences in the transaction characteristics between marketing solutions. Transaction costs are said to be impacted by transaction characteristics of uncertainty, frequency of transaction and level of asset specific investments made. Price uncertainty can be reduced by entering into fixed price contracts; however this creates price risk from upward movements in the schedule. Processing space uncertainty is reduced under committed supply arrangements. Frequency of transactions should remain the same regardless of supply option, as generally lambs will be sent off at regular intervals in line with growth rates. While some asset specific investments may be made for some supply options, there is generally little restriction between entering and exiting committed supply options. This illustrates that there is likely to be different reasons for supply channel options.

There is currently no research into the marketing decisions of New Zealand sheep producers. Producers face a range of marketing solutions to choose from. These options will differ depending on a range of variables. These may include the pricing and payment method, services offered, flexibility of sales, production practices and the related investment needed, risk, and logistics. Variables related to producer characteristics also influence these decisions. These personal variables include emotive aspects such as a personal relationship or bond with the individual buying agent or processing company, and the producer's willingness to invest time and attention in marketing decisions.

The dynamic nature of producers selling decisions is also often not well captured in previous studies. Commonly in economic theory static models of efficiency are used to analyse behaviour, yet often more complex and multifaceted decisions are being made. In this context New Zealand producers will be making decisions that can have medium to longer term strategic decisions, as well as tactical day-to-day selling decisions. The difference between these decisions and the different factors that influence the different decision needs to be acknowledged.

## Chapter Three Methodology

### 1. Research Design

This research aimed to explore and investigate the differences in selling behaviour of New Zealand lamb producers, and the factors that could increase collaboration and commitment, as well as improve the nature of relationships in the producer to processor supply chain transaction. The method attempts to explain human behaviour by determining which factors can explain the most variance in differences between producers based on their selling behaviour. This can then be used to identify potential factors to influence or change behaviour. Determining the factors of most importance provides information for livestock buyers and others dealing with producers to create solutions that provide value to segmented groups of producers.

A survey was carried out on a targeted random sample in order to provide generalisations about the population of producers. The unit of analysis was the individual producer, specifically New Zealand owner-operators of farms and lamb breeders or finishers that sell lambs to sell to a processing company. The survey investigated the values of particular variables, as well as the co-variation of certain variables that may form a relationship (Philliber, Schwab, & Sloss, 1980).

A survey was developed and administered to investigate the value placed by producers on different variables when making selling decisions and the characteristics of the producers. The survey was designed following a literature review of methodologies from similar studies and based on interviews with producers, meat company representatives, and other industry experts.

Interviews with 14 sheep producers around the country were used to test some of the main concepts developed from the literature. Interviews assessed whether additional factors not covered in existing literature may affect selling decisions of New Zealand sheep producers. Staff in charge of procurement for eight different meat companies were interviewed to discuss the different supply plan options available to producers, and to identify any differences in requirements or benefits to producers from each company. The survey was tested for questionnaire design and ease of completion with seven producers. The initial design was adjusted based on feedback from producers. The variables were analysed to determine which factors have the most bearing when differentiating producers carrying out differing marketing strategies. Subsequently these factors can be used to identify mechanisms to influence producers' behaviour.

#### 1.1 Research setting and sample

A purposive random sampling procedure was used. Differences in selling decisions may result from the number of selling options available and from different agro-climatic conditions. To limit the impact of these factors on the results, two regions in New Zealand were targeted for the study sample. Two large lamb producing regions from each island were selected. The regions both have several different meat processing companies operating in them from which producers could choose to sell their lambs.

The East Coast and Otago/Southland regions were chosen for sample selection for a number of reasons. It was decided that it would be better to target regions rather than survey the whole country. This would reduce the effect of regional differences on the results. The sampled regions represent several different land use classes within New Zealand from extensive high country farms in the South Island, to steep hill country, and more intensive finishing country.

**Table 2: Regional farm numbers and lambs tailed**

Region	Northland	Waikato/BOP	Taranaki Manawatu	East Coast	Nelson/Marl b West Coast	Canterbury	Otago/ Southland	Total
Farm numbers	940	2,095	1,425	2,305	490	2,850	2,595	12,700
Lambs Tailed (000)	460	3,300	3,100	6,400	750	4,800	9,400	28,210

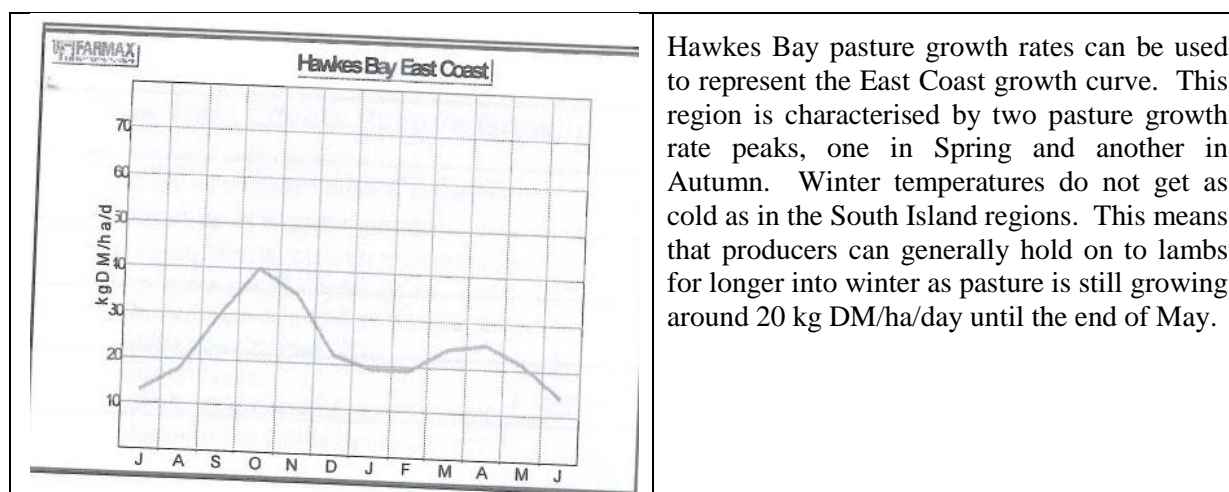
Source: Beef and Lamb New Zealand Economic Service, 2011

The sample was drawn from AsureQuality Limited. This government owned company audits the entire New Zealand meat supply chain in terms of farm assurance, disease control, biosecurity surveillance and response, and product and food safety. The company has a database of producers throughout New Zealand who are registered as part of the farm assurance programme. A sample of 2,700 producers was requested based on the following criteria:

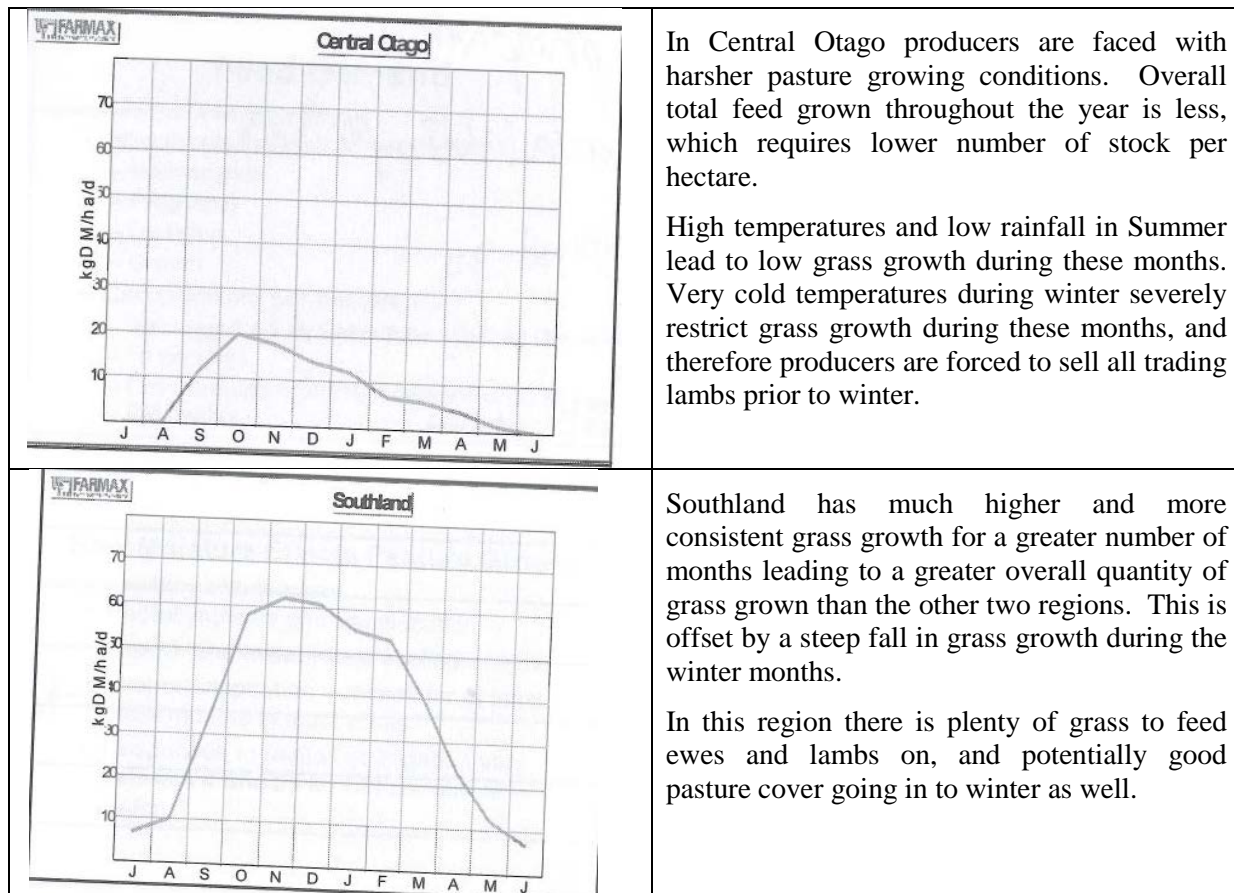
1. Farms that are breeding or finishing lambs and over 150 hectares.
2. From the East Coast of the North Island (Gisborne, Hawkes Bay and Taranua/Wairarapa) and the Otago/Southland regions.
3. With email addresses.

The survey focused on the transaction for prime lambs ready to be sold to a processing company. Therefore survey participants were asked only to respond to the survey if they finish some prime lambs in a normal year. Producers that are solely breeding properties were excluded from the analysis. While these producers must still make selling decisions, and are an equally important part of the supply chain, they were excluded as the survey was designed to examine the relationship between producers and processors.

Annual average pasture growth rates for each of the regions sampled are illustrated in Table 3. Pasture growth rates impact the type of farming system that can be carried out in each region, and the flexibility that producers have in terms of the need to sell lambs quickly going in to winter months.

**Table 3: Pasture growth rates for sample regions**

Hawkes Bay pasture growth rates can be used to represent the East Coast growth curve. This region is characterised by two pasture growth rate peaks, one in Spring and another in Autumn. Winter temperatures do not get as cold as in the South Island regions. This means that producers can generally hold on to lambs for longer into winter as pasture is still growing around 20 kg DM/ha/day until the end of May.



Source: Farmax data from AbacusBio Limited (2008)

## 2. Examination of different methodological approaches

### 2.1 Conjoint analysis and transaction cost economics approach

While suitable for market segmentation for product marketing purposes, conjoint analysis did not seem appropriate for analysis of producers selling decisions in this circumstance. Conjoint analysis limits the number of variables that can be analysed as well as needing to specify a limited number of variable levels. Additionally, results from previous research using this technique for a producers selling decision were rudimentary. The studies could only conclude the order that producers judged a limited number of variables and that they would generally prefer to choose the level that seemed to be obvious as preferential e.g. higher prices over lower prices and easier access over tighter access to processing space. This method also limits the research to study a producer's decision between hypothetical situations at a static point in time.

The traditional multiple regression transaction cost economics approach was also not considered appropriate as it analyses decisions made at a static point in time. The differences could be seen to relate to individual perceptions of differences in transaction costs, and this idea is developed in Section 3.2 Perceived transaction costs effect on searching and selling behaviour.

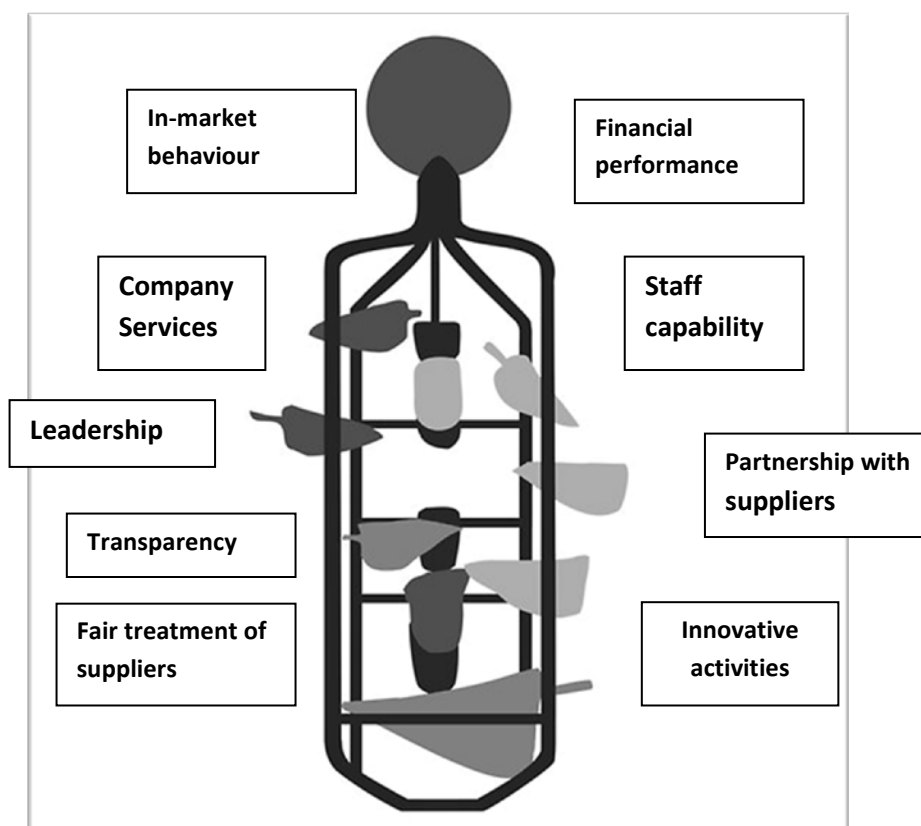
### 2.2 Influences of behaviour

Exploratory interviews portrayed that the choice of selling channel was more of a dynamic process with certain factors that can influence the decision over time rather than a static choice, as depicted in previous studies. Producers may be operating at the margin, and are content with the situation until something happens to make them change either their meat company or their supply plan. This could

be something such as a season of volatile prices, a season of particularly high or low prices, volatile weather, and a change in meat company strategy or a break in trust between a producer and their processing company or buyer.

To be able to identify factors that may lead to changes of processing company or supply plan, differences between companies and supply plans need to be identified. These can include prices, services offered, staff capability, level of partnership with suppliers, company strategy and in-market behaviour, level of innovations etc. Over time one or another of these factors may cause a producer to a change between companies. The importance of different factors may be affected by the producer's values or attitudes. Similarly, different factors may lead a producer to switch between spot market and more committed supply plans.

A useful analogy for this process is a bucket fountain. If we picture a bucket fountain as in Figure 3.1, the different buckets represent the possible drivers of change.



**Figure 3.1: Changes of behaviour**

The size of the buckets can represent the differences in producers' sensitivity or level of responsiveness to these changes. This may be linked to the perceived level of repercussions or switching costs. The tap that lets water in to the bucket represents the level of incentive that the change would deliver. The larger the bucket, the more incentive a producer needs to switch, either because they are less sensitive to the change, or because they perceive large switching costs or repercussions. An example is price sensitivity. The more price sensitive a producer is, the smaller their bucket for price changes. This means that it takes very little incentive or change in price for them to switch. They see a high value in switching for a small price change, and see little repercussions or switching cost. Producers were questioned as to which of the following company factors has been considered as a cause for changing the meat company they sell their lambs too. The

size of the buckets for a producer may be linked to their orientation and values about other factors assessed within the survey including:

1. Production focus
2. Market focus
3. Cost focus
4. Flexibility focus
5. Stability focus
6. Innovation focus
7. Governance/ownership preference
8. Commitment
9. Convenience
10. Independence/Autonomy
11. Quality orientation
12. Price orientation
13. Relationship quality

### 2.3 Price

One of the issues in survey design was how to measure the importance of price relative to other factors in determining selling decisions. Price is often rhetorically touted as the most important factor in producers selling decisions. However, it would seem that some producers are more price oriented than others are. Measuring the effect of price was considered by asking the question of producers: “If prices between companies were the same, then what would be your primary consideration when choosing between companies such as company strategy, innovation, ownership structure, services, processing space etc”. Similarly, “If prices for contracts were the same, what would be your primary consideration when choosing between two contracts, such as able to fit farming practices, premiums for tighter specification, penalties etc”. However, in reality prices offered may or may not be the same. The difference will be based on the differences in perceptions of producers. This section was adapted slightly to ask respondents if there were two companies and one had offered you a certain price, what increase in price it would take you to switch. This is a more accurate method of measuring price sensitivity of different producers, with some seeing value in switching at a lower level of price difference, while for others it may take a larger margin to switch. Producers were similarly asked how likely they were to commit lambs at different price incentives, and how likely they were to break a commitment at different price incentives. These differences in perceptions were included in the principal component analysis for a producer’s values. Producers were surveyed on the extent that they considered there to be differences between companies and the prices offered by companies.

### 2.4 Supply chain relationships

One of the factors that came across as important in the literature and from conversations with producers was the status of relationships in primary industry supply chain transactions. However, it is unclear whether the strength or type of relationship actually relates to the choice of supply chain channel. Producers were surveyed on the quality of the relationship with the party they saw as most important. This could have been either with the meat company as a whole, the meat company’s livestock representative, or with a third party stock agent.

All producers will have a relationship with a meat company, a meat company representative or a third party agent when they sell their lambs. However producers will generally differ in who they perceive

as their main relationship depending on how important they consider services provided by the individual representative or agent. Some producers rely on their agent to manage the entire selling process, including drafting lambs and finding a market, whereas other producers will only call the agent or representative to book in processing space. The differences in the quality of this relationship may have an impact on producers selling decisions.

Producers were asked to rate the perceived quality of the relationship as well as rate the level of different relationship factors as described in Appendix B. The definition of buyer changed depending on whether the relationship was indicated as with a company or a company representative or third party agent. Relationship factors were initially grouped into three areas; the buyer specific qualities, the situation that the relationship operates within, and the level of interconnectedness between the producer and the other party.

The literature review, initial interviews with producers and industry experts and pilot survey testing, determined the following topics to be included in the survey:

1. Producers' decision-making process and selling behaviour.
2. Producers focus on market, production, flexibility, stability and cost orientation.
3. Producers values in relation to certain supply plan and company specific factors.
4. Factors that may cause producers to change between companies or between supply plans.
5. The quality of producers' relationships with their buying agent or meat company.
6. Farm and producer characteristics.

These topics were used to develop a range of independent and dependent variables that can be used to compare differences in producers' behaviour. This study covers a wide range of variables including the producer's strategic orientation, values, relationships, and demographics. The wide range was included to be able to determine which variables have the most importance. Variables and constructs used in the survey and a copy of the survey form are included in Appendix B.

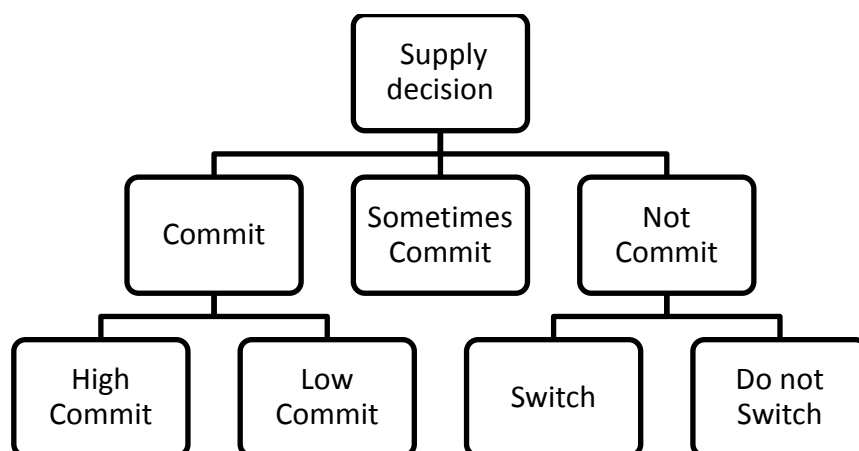
### **3. Proposed connections and relationships**

The first step was to determine the dependent variables that will be considered. There are several possible ways to categorise the supply channel decisions based on level of vertical coordination or company governance structure. For the case of the New Zealand sheepmeat industry, five options were analysed. These are separated by whether or not the producer enters a committed supply channel or not, and then whether or not the producer exhibits a high level of buy in to the channel or not. The fifth option of Sometimes Committing lies in between those producers that always commit and those that never commit. These different types of marketing strategies either commit or not commit, and the different levels of each strategy are the main focus of this study. Identifying the different features of each of these selling options was the first step in answering the first research objective of increasing the understanding of different selling behaviour by producers. The results section highlights differences between producers carrying out the different marketing strategies.

Strategies are categorised firstly based on how often the producer has committed their lambs to one company in the last five years. Secondly the producers are split based on the level of buy in they have to the initial split. Those that always commit are split into high or low committers based on the specifications of their commitment arrangement. High Committers are subject to greater specifications in delivery and price by meeting monthly or weekly delivery of specified lamb numbers, aiming for targeted weight and fat grades, have breeding or feeding requirements, or delivering under a contracted fixed price. Low committers are subject to less stringent specifications, but still provide an annual commitment of lambs to one company, and meet weight targets. These



producers are seen as having a low level of buy in to a committed programme. Sometimes Committers have committed once or twice in the last five years, and are either new to committing, or have tried to commit but then for some reason have stopped. These producers were found to be more likely to commit to a fixed price contract arrangement than those that always commit.



**Figure 3.2: Dependent variables**

Producers that have not committed in the last five years were split into those producers that have switched companies and those that have not switched companies in the last five years. Those that switch were considered to be more active in searching out the highest price on the day, or are active in their consideration of which meat company to sell too. This implies that Switchers carry out a certain amount of searching for information and evaluation of alternative companies and selling options. This can either be carried out by the producer, or they may use a third party agent. This implies a high level of buy in to the Non Commit option. Non Switchers are considered more complacent in their selling decisions, as while they have not actively looked to switch companies in the last five years, they are not compelled to commit to their current company. This option has a very low level of searching and evaluation and represents a low level of buy in to the Non Commit option.

It is important to note that there are generally low switching costs to move from one strategy to another. While there are some increased specifications to become a High Committer, some of these can be adhered to if a producer was to sign up to a high commitment arrangement within a season. Others specifications take greater investments and time such as feeding and breeding specifications, however this is currently a specialised type of commitment. Tighter specifications may require increased monitoring of lamb growth rates and condition on farm. There is a price risk if the schedule goes above the fixed contract price, and there may be penalties if a producer fails to meet the specifications. Premiums generally increase with the more stringent specifications for most companies, but not in all circumstances. Low commitment requires the specification of an annual commitment of lambs, to certain weight targets. This commitment is generally made at the start of the season, and there is generally some level of flexibility around timing and numbers of lambs at each delivery. To shift from being a Committer to Non Committer may incur some costs through loss of premiums, having to pay penalties, losing guaranteed processing space, and potentially reducing the quality of the relationship with the company or buyer. Sometimes Committers illustrate that producers can go from committing to not committing between years.

Non Switchers may have to make some changes to farming practices as mentioned above if they change to committing. If they were to change to Switcher category, they may have to increase their search for information and evaluation of alternatives either themselves or through building a relationship with a third party agent. Switchers would also face similar changes to become a

committer, but these may potentially be more, as one of the main reasons they do not commit is because it does not suit their farming operation. This may mean they may have to change elements of their farming operation (for example decrease stocking rate to be able to finish a higher proportion of lambs born, increase weighing and monitoring of lamb growth, or increased pasture management, or use of crops and supplements) to be able to meet the needed growth rates for delivery of specified lamb numbers and weights. The relationship with a third party stock agent may also need to be reduced if a Switcher decides to commit. There may also be a reduction in the searching and evaluating of options that the producer currently did as a Switcher.

The attributes of each option are outlined in the results section of the reasons producer commit or not. The groups of producers were compared based on their most popular reasons for carrying out the marketing strategy that they do. The attributes of the solution that appeals to the producer can be thought of in the same way that different attributes of consumer products appeal to different types of consumers. The attributes of each solution differ based on the level of perceived benefits and costs such as flexibility, reward, risk, autonomy, and partnership. When a producer commits they can decrease uncertainty through secured processing space. High Committers can decrease price risk through fixed price contracts, and decrease delivery uncertainty through targeted production specifications. Commitment can increase partnership with the processor through increased information, and increased links with the end consumer. Commitment can increase rewards producers receive through a range of premiums which vary based on the level of commitment.

On the other hand commitment can decrease flexibility due to requirements placed on producers that they would not have under non-commitment. Commitment can also decrease flexibility if the arrangement does not fit with the current farming operation as producers may then have to make changes or limit other operations on their farm to meet the commitment arrangement. Some producers may find that commitment arrangements are too complicated which increases uncertainty and information searching costs. Commitment can increase risk of monitoring costs through contract enforcement as well as the possibility of the processor renegeing on the contract, or the schedule price being higher than contracted prices. Commitment may be perceived to reduce the amount of autonomy a producer has when making their selling decisions.

### **3.1 Impacts on marketing strategy**

The proposed connections and relationships described in Figure 3.3 were constructed based on the literature review and interviews with industry experts, producers and processors. As identified from the literature, several factors need to be considered when interpreting a producers' choice of selling channel. The existence and nature of the connections and relationships illustrated below was investigated in the survey. Rather than a series of strict hypothesis being tested, an exploratory statistical analysis was carried out to investigate what types of factors have the most influence on the producers' decision of supply channel choice.

The overall choice between committing and not committing is thought to be influenced by strategic orientation, values and relationship status. However the level of buy-in to a channel, which will impact the level of commitment to a channel, can be thought to be influenced by the perceived level of attributes of the solutions.

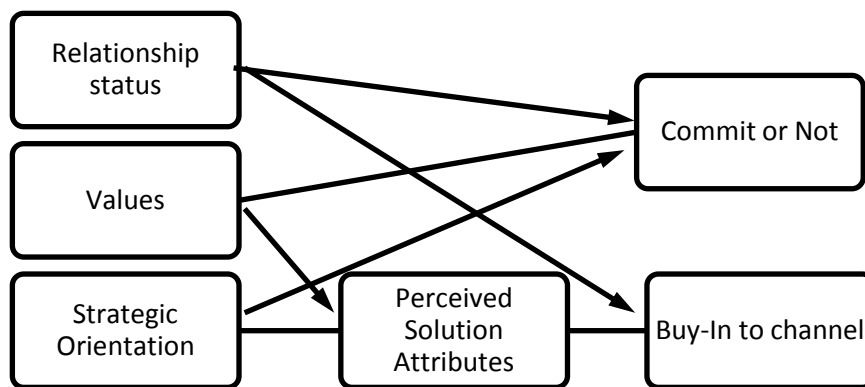


Figure 3.3: Hypothesis One

### 3.1.1 Perceived solution attributes effect on buy-in to channel

Solution attributes are the factors that differentiate channel options. Identifying the different types of solutions available to producers was highlighted as an initial question of this research. The four solutions will differ in the attributes that are presented to producers. These attributes differ in the level of risk, reward, and flexibility available. Survey participants were asked to rank the importance of the reasons why they chose the supply channel option they do. These rankings can be interpreted as the attributes of the solution that have the highest value to the producers. It is hypothesised that the producers with high levels of buy-in to either commit or non-commit channels will do so for different reasons than those with a low level of buy-in.

### 3.1.2 Values and strategic orientation effect on whether commit or not and perceived solution attributes

It is hypothesised that values and strategic factors will influence channel choice as to whether or not a producer decides to commit; as well as their level of buy-in to that channel indirectly through perceived solution attributes. Some of the proposed hypothesised values that were thought to have influence include commitment, convenience, quality orientation, governance preference, innovation, and independence. Strategic orientation factors include market, production, flexibility, stability and cost focus. Refer to Appendix B for an outline of these proposed constructs. These were altered following data collection and revised to new constructs outlined below. Correlations between the original grouped questions were not as high as expected, and therefore exploratory principal component analysis was carried out to create new factors. However the resulting factors did not differ significantly from those originally proposed as outlined in Table 4, apart from the Relationship group which was significantly reduced to two components.

Table 4: Principal Component Analysis factors

Groups	Original constructs	Revised constructs
<b>Strategic Orientation</b>	Production Focus Market Focus Stability Flexibility Cost	Market Focus Trader
<b>Values</b>	Governance/Company preference Commitment	Conscientiousness Convenience Autonomy

	Convenience Independence Quality Focus	
<b>Selling behaviour</b>	Bargaining power Active	Active Influencer
<b>Relationships</b>	Competence Accessible Integrity Communication Benevolence Power balance/conflict Price satisfaction Interdependence Goal congruence Trust Partnership Benefits	Trusting Adversarial

If differences are found to exist in strategic orientation and values of producers with different levels of buy in to the channel, the differences between producers sub groups and the perceived solution attributes can be further investigated. A producer's perception of solution attributes, and hence the hypothesised relationship with the level of buy-in to the channel, may be influenced by their values and their strategic orientation. Differences in ranked importance of attributes of solutions between each of the high and low buy-in groups can be analysed to see if values and strategic orientation affect perceived attributes solutions.

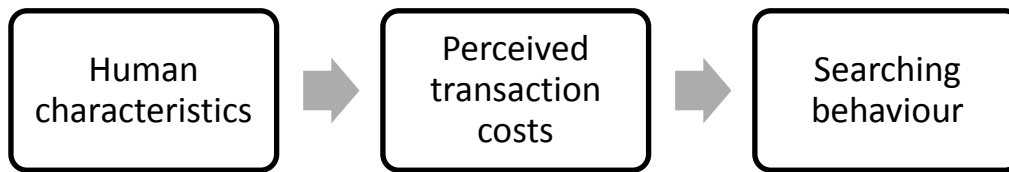
### 3.1.3 Relationship status effect on channel choice

Based on the literature, the status of a relationship could potentially have an impact on channel choice. Survey participants were asked who they considered to be the main other party in their lamb sales either the meat company, a meat company representative or a third party livestock agent. Subsequently they were surveyed on their perceived quality of that relationship and other questions relating to the status of the relationship. Differences may exist in the results for these factors linked to whether a producer commits or not, and the level of buy-in to the channel.

## 3.2 Perceived transaction costs effect on searching and selling behaviour.

The effect of an individual's perceptions of the differences in cost of transaction for different options was investigated (Figure 3.4). Based on interviews with producers, it seemed that the issue of supply channel choice may be more dynamic and complex. In line with traditional transaction cost economics, there may be a link between the transaction costs and search, negotiation and monitoring. However the link may instead be that human characteristics create differences in perceived transaction costs which then affect searching and selling behaviour, rather than the choice of supply channel explicitly.

Human characteristics relate to the notions of rationality, limited information and opportunism. These factors will differ for each individual and therefore affect how a producer perceives the costs of transaction. Human characteristics may include competencies for searching for information, processing that information to make a decision, and then carrying through with that decision. Perceived transaction costs include the costs of searching for information, finding a buyer, evaluating different options, negotiating the transaction, and assessing the quality of service provided. Searching behaviour includes the number of options evaluated when selling lambs, the sources of information most frequently used, and whether or not an agent is used.



**Figure 3.4: Hypothesis Two**

Transaction costs are said to arise because of the bounded rationality, asymmetric information and opportunistic tendencies of agents. These internal individual specific factors may play a much larger role in determining channel choice than the external factors of uncertainty, frequency and investments. Individual competencies and preferences may determine how much time and energy is allocated to searching, negotiating and monitoring for any type of supply channel chosen. This may be based on their perceptions of the relative transaction costs for each option.

Producers who sell on the spot market may spend as much or more time searching, negotiating and monitoring as those who enter into more committed supply plans. Differences will arise based on individual's perceptions of the relative costs and returns of additional searching, negotiating and monitoring. The relative cost may depend more on the producers own ability to carry out the necessary activities for each supply channel choice than the transaction costs determining the most efficient type of channel option. It is hypothesised that while perceived transaction costs may have an effect on the searching behaviour of a producer; it is not directly linked to the channel choice.

## 4. Data Collection and Analysis

### 4.1 Data collection

Surveys were sent electronically and by post. Initially, 1,554 email addresses and 1,145 postal contacts were received, giving 2,699 contacts. Seventy-eight postal surveys were returned due to errors in the address. From the 2,621 producers that potentially received a survey 883 responded in some way (34%), and there were 760 usable responses (29%).

Producers with email addresses from the initial list were sent an online survey created through Survey Monkey, an online software system for surveying. Refer to Appendix A for a copy of the covering letter and information sheet that went out with the survey on the 23<sup>rd</sup> September to 1,554 email addresses. Producers were invited to partake in the survey within the following two weeks. A link to the online survey was included within the message. When producers clicked on the link, they were taken to online survey. At the end they could enter their details to go into the draw to win one of three \$100 Mitre Ten Mega Vouchers. Respondents could choose not to answer any of the questions.

There was a high rate of failed email deliveries, which indicated that the list of contacts was quite out of date. Four hundred and eighty-nine email addresses were returned as failed messages due to non-existent email addresses, representing just fewer than 30 per cent of emails sent out. A postal survey was sent to the contacts that did not have email addresses provided as well as those whose email addresses had failed. On the 26<sup>th</sup> September, the initial 1,145 postal surveys were mailed out. This included a cover letter, information sheet, copy of the survey and a return envelope. Additionally on the 6<sup>th</sup> October, 489 postal surveys were sent to those producers whose email addresses had failed in the electronic send-out. Some changes were made in the second round of postal surveys following responses from the first round. Producers were given the option to complete the survey online, with the web address included in the cover letter. The survey was altered slightly following some postal

survey responses. Changes included highlighting the need to only fill out certain sections, as many respondents had filled out sections that were not required based on answers to previous questions. Instructions regarding the requirement to rank some preferences were improved as some respondents had not been ranking preferences as required. These changes were unlikely to have affected the nature of responses.

In total 883 responses were received. From that 45 people (11 by email and 34 by post) responded that they were no longer farming, had converted to dairy, were not in the specified region, or had a smaller than required farm. A further six had leased out their farm, 27 were only selling store lambs, and 10 returned the survey not filled in for any specified reason. Thirty-five responses were received after the cut-off date to the time of writing. Due to the sufficient initial response rate, the anonymous nature of responses, and to save costs of posting a letter to the entire sample again, no reminder letter was sent. This does not allow analysis of non-respondents, but this analysis could be achieved through further research. Demographics of sample participants are outlined in the results section.

## 4.2 Data analysis

The data was analysed in a number of different ways. Initially exploratory data description was carried out to establish an understanding of the nature of the data, and where any trends may lie. Then Principal Component Analysis (PCA) was carried out on sections relating to strategic orientation, selling behaviour, values, and relationship status. This analysis was then used in logistic regression partition modelling to demonstrate the factors of greatest variance between producers carrying out the different types of marketing strategies. Chi-square tests of independence were used to examine where differences exist in reasons for behaviour between different groups of producers. These results are outlined in Appendix D. Interaction plots were created to compare the different information sources used, services preferred, and reasons for changing companies for different groups of producers. Interaction plots also illustrated differences in sensitivities for producers to different price points for changing behaviour. The role of the agent and rewards in changing behaviour was also examined.

### 4.2.1 Data checking

PCA was carried out on the sections for strategic orientation, searching and selling behaviour, the values of producers and the relationship status. Data was collected through Likert Scales ranging from 1 (Strongly Disagree, or No extent) to 5 (Strongly agree, or High Extent). Respondents were able to not answer any questions, and hence there were several respondents that had either not answered any of the questions, or not fully completed the questions. To allow analysis with missing data, multiple imputations using the nearest neighbour method was carried out.

### 4.2.2 Principal component analysis

While it was intended to use pre-designed constructs based on previous literature and interviews, once surveys were returned, it was found that the original constructs as in Appendix B were not suitable to capture the variance in the data. Therefore exploratory factor analysis was carried out to investigate which types of constructs could explain the most variance in the data. PCA was used rather than factor analysis, as factor analysis only improves the interpretability of the loadings by removing variables with low loadings. PCA is preferred for simplicity.

PCA describes the variation in data in terms of new, uncorrelated variables called principal components. Each principal component is a linear combination of the original variables (loadings or weightings). Principal components are ordered so that the first contains the most variation and the second has the next most variation and so on. Therefore there will be a point where additional components add little value to the analysis. The number of components used for each group was

decided based on scree plots of the percentage of variance explained by each component as well as the degree of interpretability provided by each component.

The principal component scores were obtained for each individual by multiplying the weightings and standardised original scores. Scores were standardised so that for each principal component some individuals end up with negative scores and others with positive scores even when all the component loadings have the same sign (positive or negative) (Kawabata, 2011). Standardisation of the scores reduces the orthogonal nature of the components, however this condition does not hold perfectly under factor analysis either (Godfrey, 2011). The statistical software R was used to carry out the analysis. Correlations between Principal Components were also calculated, based on a Bon Ferroni adjustment of significance of  $p = 0.123$ . Refer to the results section for a table of the significant correlations between Principal Components.

### **4.2.3 Modelling**

Regression modelling was used to investigate which factors and variables could explain differences in producers selling behaviour. The package Rpart, from R was used to model the data. Rpart uses recursive partitioning to create a decision tree which classifies a producer as a committer or non-committer. All principal components and demographic variables were initially included in the model and the package Rpart selected the significant variables in terms of classification. Once analysis had been done to compare Committers to Non Committers, a similar process was carried out to compare High and Low Committers, and then Switchers and Non Switchers.

Cross validation was not carried out as the models are primarily exploratory and not expected to be used for behavioural predictive purposes. Regression partitioning with a binary response allows the creation of groups based on the variables that are most important in defining the groups, rather than using all available variables as is the case in traditional hierarchical clustering techniques. Additionally regression partitioning allows the interpretation of different groups based on the most important variables, rather than clustering on certain variables, and then having to interpret the clusters through a second regression analysis of variables of difference (Godfrey, 2011).

The five groups were then compared for differences in reasons for behaviour using Chi-square tests of independence. Each respondent was asked to rank their preferred reasons from most important to third important reason why they do or do not commit. Pearson's Chi-square tests for independence compared the observed number of respondents that ranked each question first, second and third with the expected number based on the cell counts from a product of the row and column numbers over the total sum. The null hypothesis was that there is no relationship between question and ranking variables. Refer to Appendix D for a table of observed and expected responses, residuals and the Chi-square test statistics.

## **4.3 Validity and reliability**

Certain criteria need to be met in order to ensure research design quality. These are explained below.

### **4.3.1 Internal validity**

Construct validity ensures that what is intended to be measured is measured, and that a true representation of reality and the proposed relationships is presented (Netemeyer, Bearden, & Sharma, 2003). This is achieved through three steps: (a) specifying a set of theoretical constructs and their relations (a theory), (b) developing methods to measure the constructs of the theory, and (c) empirically testing how well manifest (observable) indicators (items) measure the constructs in the

theory and testing the hypothesized relations among the constructs of theory as well (Netemeyer, et al., 2003, p. 6).

A combination of methods was used to ensure construct validity. A literature review identified previous attempts at construct development, strengths and weaknesses of approaches, and whether good measures of constructs already existed. These constructs were used as a starting point and adjusted to better fit the New Zealand sheepmeat industry. Questions were further adjusted following survey testing with producers, and reduced in number to keep the survey within a reasonable size.

### **4.3.2 Reliability**

Reliability of research certifies that the results are repeatable, and would yield those same results on different occasions, and different researchers would make similar observations on different occasions. Reliability of constructs ensures that there would not be differences if the same sample were asked at two points in time, and also that there is internal consistency between items in a scale (Netemeyer, et al., 2003). Internal consistency is tested by reliability coefficient Cronbach's coefficient alpha. However in this case, due to the exploratory nature of the analysis, it was assumed that multiple imputation was more important for data reliability than internal consistency testing (Godfrey, 2011).

### **4.3.3 External validity**

External validity refers to the wider applicability of the research. As 'social science, like other science, strives for explanations that are useful; and valid over a wide range of circumstances, generalisability of the findings is crucial' (Philliber, et al., 1980, p. 60). This can be ensured by random sampling if possible, purposeful or theoretical sampling, explicitly defining the context for the research and statistical or analytic generalisation. The sample used in this study, while not representative of the whole of New Zealand is representative of different land classes, and regions from both Islands.

## **5. Ethical Considerations**

The research project is considered to be low risk. Results were only used and published in aggregate form, with no possibility to identify individual respondents. Respondents were given the option not to answer any of the questions. Anonymity and confidentiality were assured by having an individual reference number on the return envelope (ensuring any identification was kept separate from survey responses) linked to the respondent's contact details on a spreadsheet. This reference number was only used to find contact details for three respondents who were randomly selected to win a prize draw.

## **6. Research Observations**

### **6.1 Research design**

The focus of the research changed slightly following the literature review. While initially looking to capture a producer's behaviour at a fixed point in time, as the research progressed it seemed the drivers of changes in behaviour and what may influence a producer's decision to change their behaviour were more appropriate. Because this required more in-depth analysis into individual situations, it may have been useful to be able to drill down more into the two different groups of producers being those that have joined into more committed supply programmes and those that have not. For example, a group of producers could have been identified that are known to be involved in a committed supply programme and another group that are known to switch companies often.



Interviews or case studies would have enabled the collection of more detail. This could include the process producers went through when deciding to enter into more committed supply arrangements and why, as well as what appeals to other producers about not committing. However a survey of many producers allows the exploration of a number of variables and relationships that can then be developed into a framework of concepts. This is especially critical given that little research has looked into the selling decisions of New Zealand lamb producers.

## 6.2 Survey

Data collection time increased because a postal survey was needed in addition to online. This delayed the start of data analysis by three weeks to a month. For postal surveys, envelopes and printed surveys need to be ordered, addresses organised, and envelopes need stuffing. While responses began to come in straight away, there was a period of three to four weeks after send-out when postal surveys were still being received. Processing of postal surveys was time consuming, with each survey taking around 10 minutes to enter into the online format. Postal surveys also raised difficulties with producers being able to tick boxes in an undesired format creating data entry issues. While changes were made to the survey in the second post out to try and rectify this issue, there were still some issues. Mostly this was for the ranking questions where producers were asked to rank reason first, second and third.

While initially concerned that length would put some respondents off, it seems that the topic was of such interest that producers were prepared to take the time to fill in the survey. This highlights the need to create balance between ensuring as much required data as possible is captured, and limiting the survey to a reasonable length. Many producers made additional comments on the postal survey that were sometimes of interest. However, there was no appropriate method to capture these comments. No opportunity was given to online respondents to comment, and respondents had not been officially invited to comment on the postal survey. Some comments received were useful in providing additional information and context to results for particular sections. These comments have come from surveys as well as initial interviews had with producers. A section in the survey to allow for any additional comments would have been useful to capture interesting remarks and provide context for the results.

For data analysis, it is important to consider the types of statistical analysis that will be used. The type of regression model used changed once the data was collected. While this could be accommodated with the type of data available, it is important to consider whether the data will be continuous, ordinal, binary, or discrete as this impacts on the type of analysis that can be carried out.

## **Chapter Four Results**

The following section presents the results from the survey and data analysis. Results aimed to identify and explore differences between producers marketing strategies, the potential areas where collaboration and commitment could be increased, and how the relationship between producers and processors could be improved.

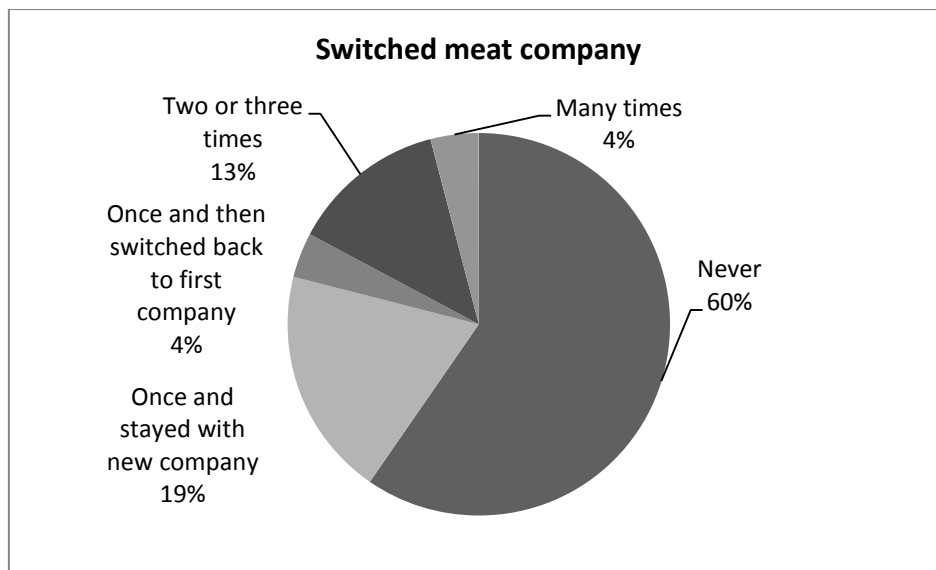
The first section covers the survey response, selling behaviour and demographics of respondents. Secondly the methodological results from the data analysis are covered which leads to the results of the Principal Component Analysis. This is followed by the regression analysis modelling. Three models are created which demonstrate differences between producers based on whether or not they always commit to one company, and the level at which they commit or not. These decisions were highlighted in Chapter Three as the main focus of this study to differentiate producers based on the nature of their selling behaviour. The next section examines the reasons producers prefer their choice of selling behaviour. This is followed by influencers of producers selling decisions and behaviour.

### **1. Survey response rate, selling behaviour and demographics of respondents**

From the 2,621 producers that potentially received a survey 883 responded in some way (34%), and there were 760 usable responses (29%). From those 760 entered into the data analysis, 734 (28%) were used in the final models due to 26 having insufficient data.

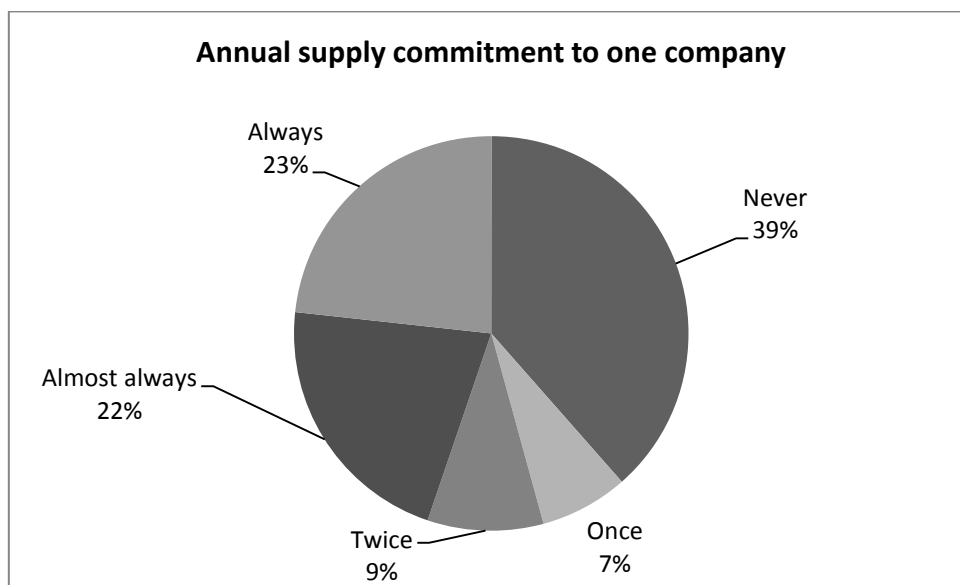
#### **1.1 Selling behaviour**

Out of the 760 producer respondents, the majority (60%) of producers have not switched meat processing companies within the last five years. Twenty three per cent have changed once, or switched and then changed back. Thirteen per cent have changed companies two or three times, and a small percentage (4%) change many times. Question design failed to capture the behaviour of producers that have may stick with two companies each year. Some meat processing companies prefer certain types of lambs (e.g. heavy lambs) which may result in a producer committing the majority of their lambs to one processor but also having another outlet for heavy lambs, or lambs finished over winter for example.



**Figure 4.1: Frequency of changing company in the last five years**

Forty five per cent either always or almost always commit to one company. Almost 40 per cent of farmers have not committed their lamb supply to one company in the last five years. The remaining 16 per cent have committed once or twice.

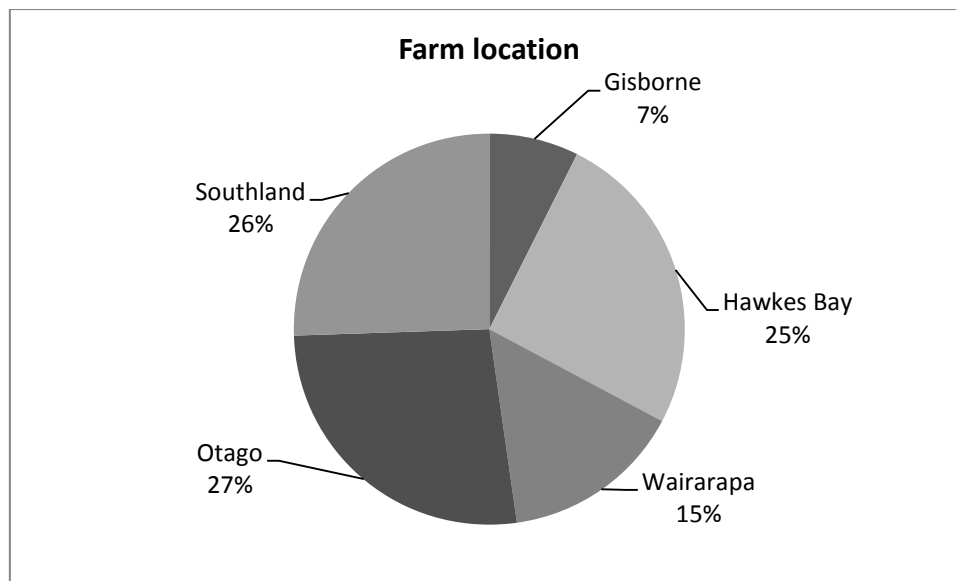


**Figure 4.2: Frequency of commitment to one company in last five years**

## 1.2 Demographics

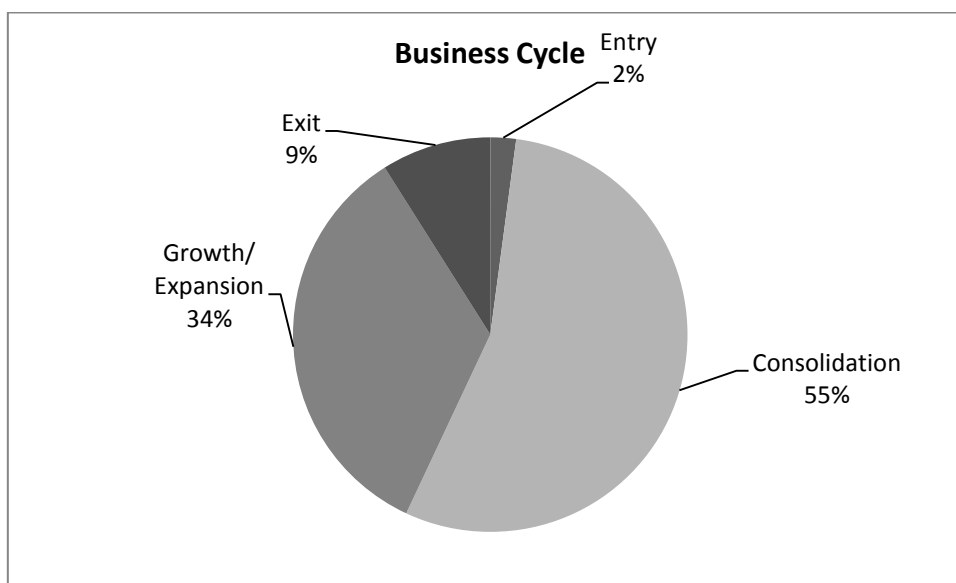
The following charts outline the results of the demographics for the 760 respondents.

The survey sample was split evenly between the North and South Islands with 47% of respondents located in the East Coast of the North Island, and the other 53% in the lower South Island.



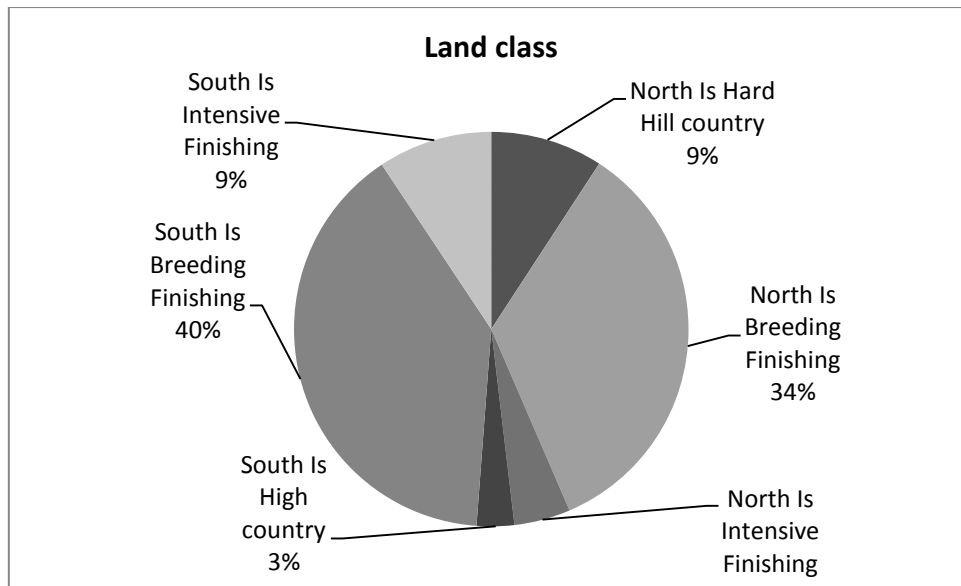
**Figure 4.3: Regional location of respondents**

Over half of sample respondents consider themselves to be in the consolidation stage of the business cycle. Just over one-third are in growth or expansion phase, 9 per cent are in exit mode, and the remaining two per cent have just entered the industry.



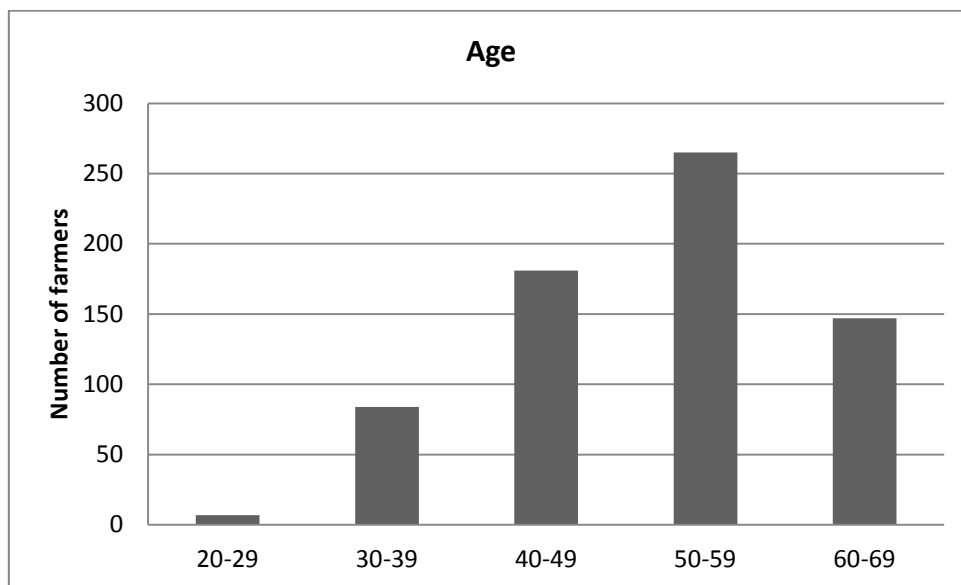
**Figure 4.4: Business cycle of respondents**

The majority of sample respondents farm in breeding-finishing country (74%). North Island Hard hill and South Island high country farmers make up 12 per cent of the sample. The remaining 14 per cent farm easy intensive finishing country.



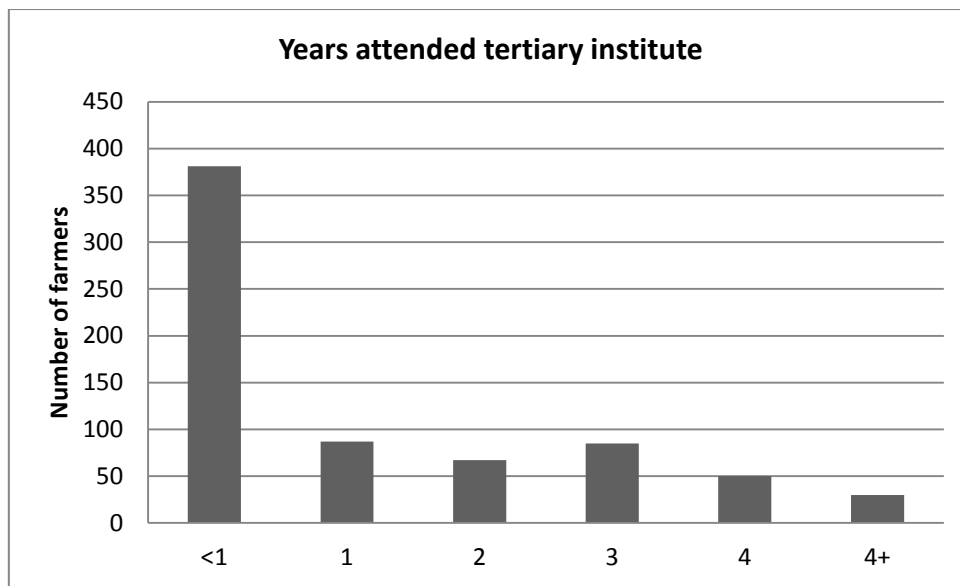
**Figure 4.5: Land class farmed of respondents**

The age of respondents is skewed to the left with greater number of older than younger farmers answering the survey. The largest group (37%) of sample respondents were in the 50-59 age group.



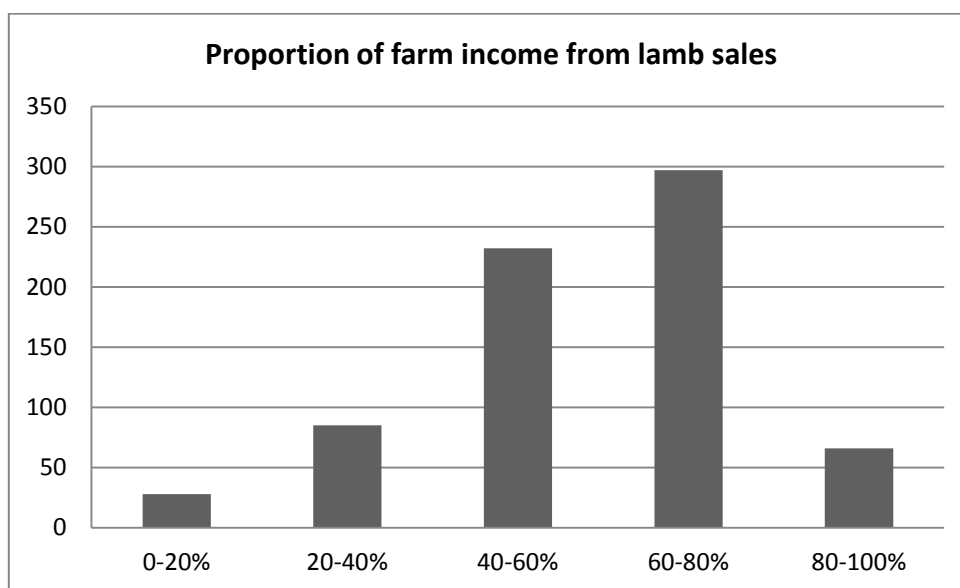
**Figure 4.6: Age of respondents**

The majority (54%) of farmers have attended tertiary education for less than one year. Just over 12 per cent have attended for one year which would indicate a diploma level degree. Just over 20 per cent have attended for 2-3 years indicating some sort of bachelor degree. The remaining 12 per cent have attended for 4 or more years indicating they potentially have some sort of post-graduate studies.



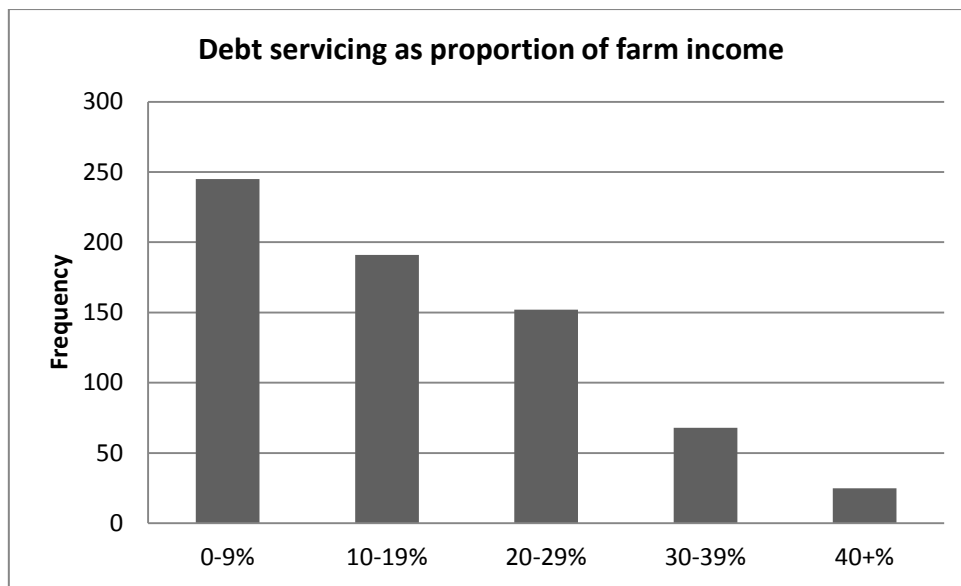
**Figure 4.7: Education level of respondents**

The proportion of farm income from lamb sales is skewed to the left. The largest group of farmers (42%) have 60-80% of their farm income coming from lamb sales.



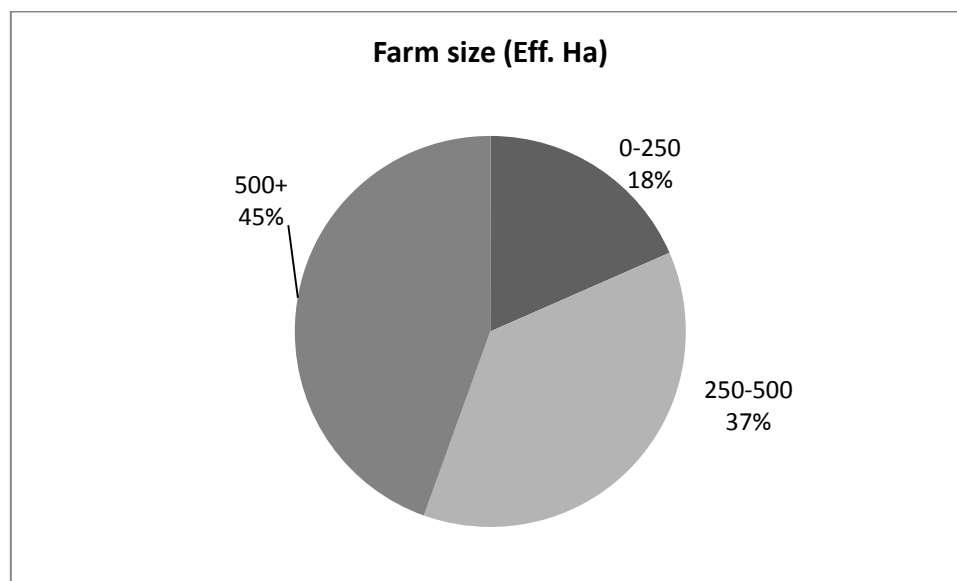
**Figure 4.8: Lamb income as proportion of total income of respondents**

The farmers surveyed had quite a low level of debt servicing (interest plus principal repayments) as a proportion of farm income in the 2009-10 financial year. The largest group (36%) had less than 9 per cent debt servicing as a proportion of gross income.



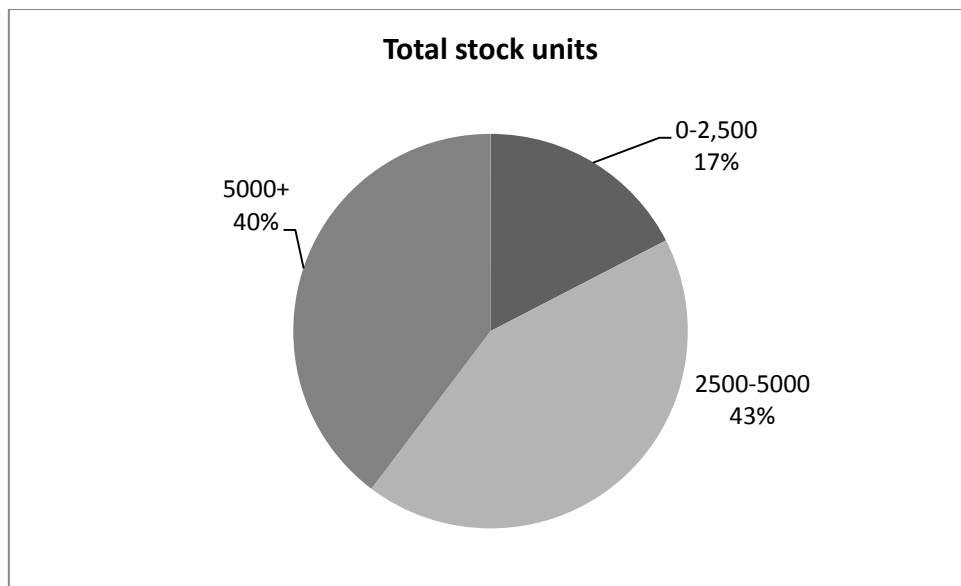
**Figure 4.9: Debt servicing level of respondents**

Forty-five per cent of sample respondents had farms larger than 500 hectares, 37 per cent farmed between 250-500 hectares, and the remaining 18 per cent were on smaller farmers of less than 250 hectares.



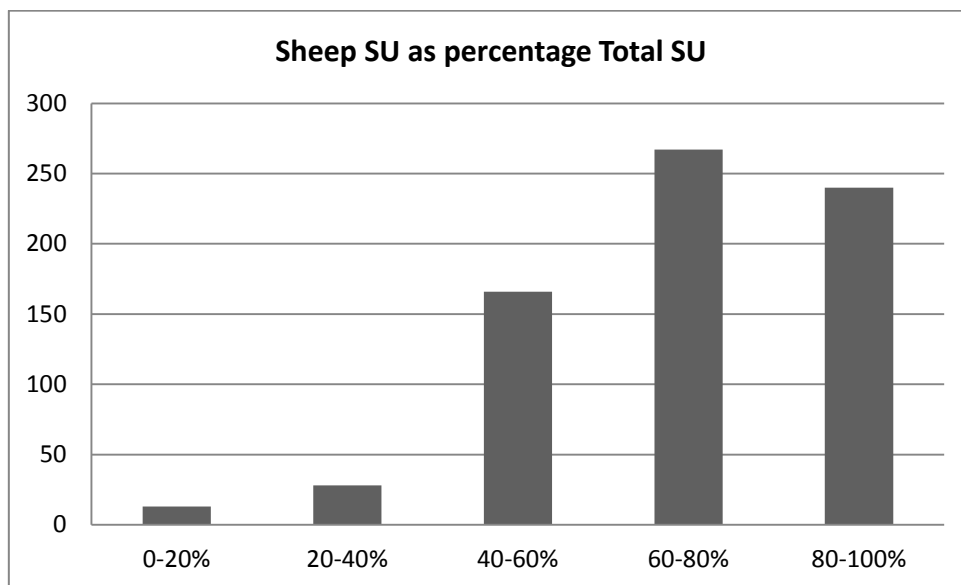
**Figure 4.10: Farm size of respondents**

Forty per cent of producers had greater than 5,000 stock units, 43 percent had between 2,500 and 5,000, and the remaining 17 per cent farmed less than 2,500.



**Figure 4.11: Total stock units of respondents**

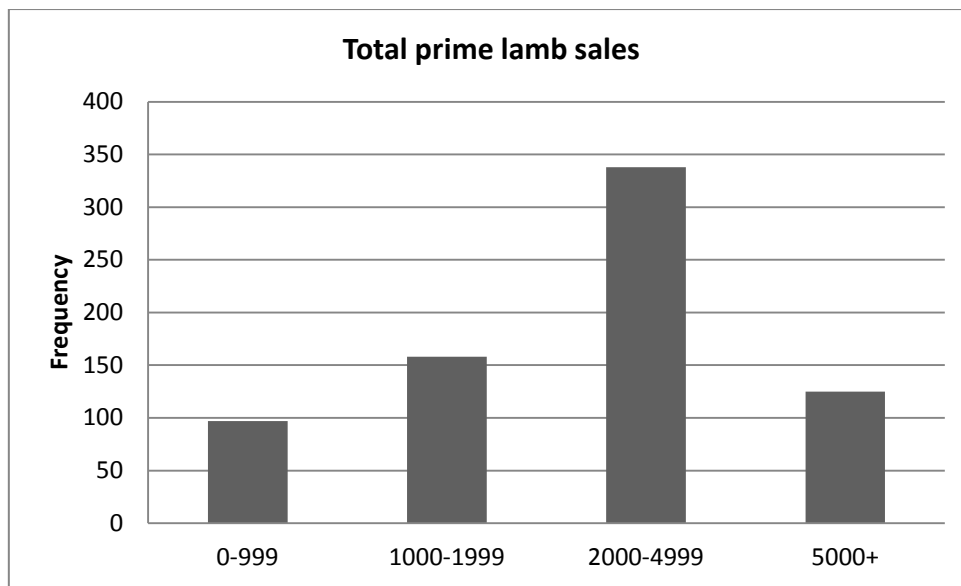
Sheep stock units as a percentage of total stock units is skewed to the left, with the largest group of farmers having 60-80 per cent of their stock units as sheep.



**Figure 4.12: Sheep stock units proportion of respondents**

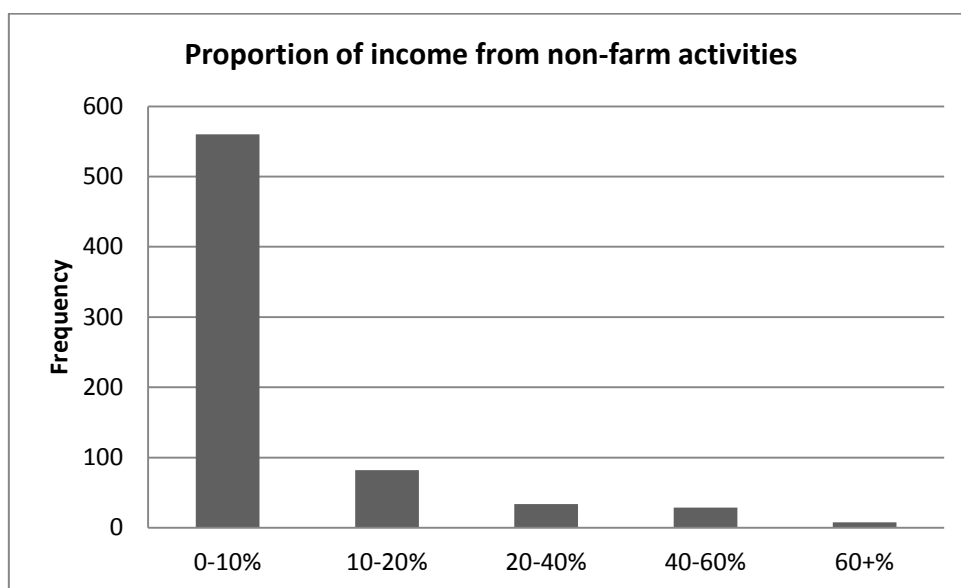
Almost half (47%) of producers surveyed sold between 2000-4,999 lambs. The rest were quite evenly split between greater than 5,000 (17%), 1,000-1,999 (22%), and 0-999 (14%).





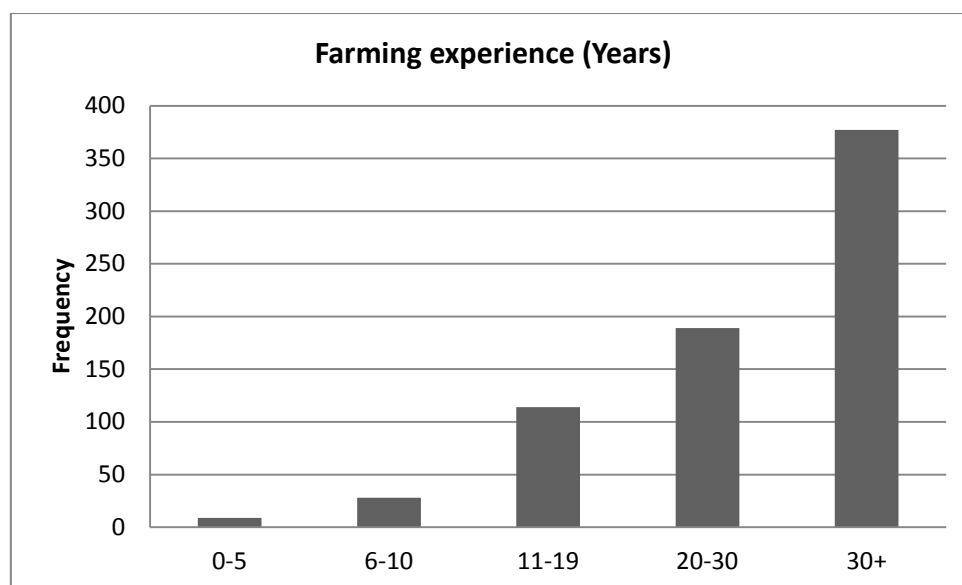
**Figure 4.13: Number of lambs sold by respondents**

Respondents generally have very little income from non-farm sources with the majority (79%) having 0-10% of income from off-farm sources.



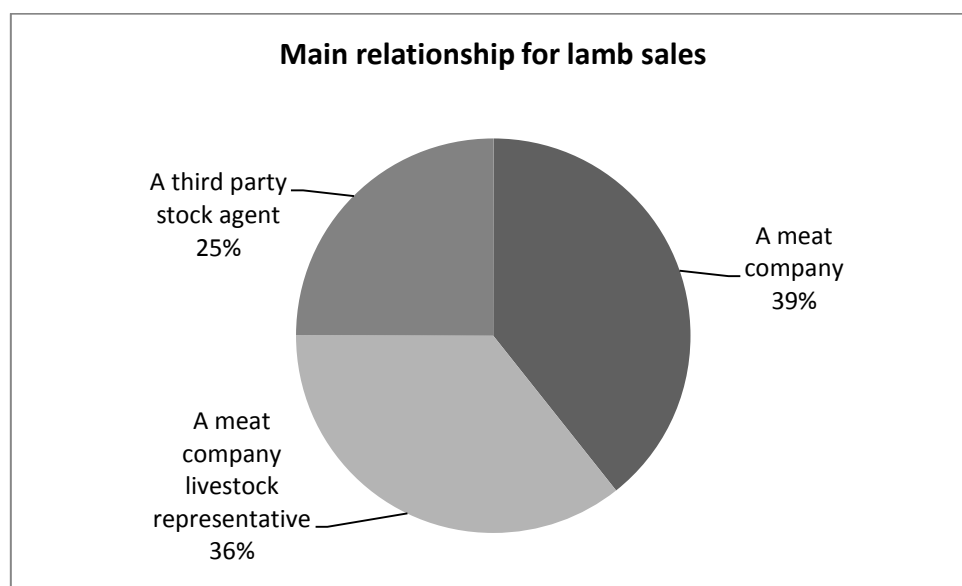
**Figure 4.14: Off farm income sources of respondents**

The survey respondents generally had a high level of farming experience, with the majority (52.6%) of farmers having greater than 30 years of experience. There was a quite even split between who producers saw as their main relationship for lamb sales.



**Figure 4.15: Farming experience of respondents**

Who the farmer considered to be the main relationships for lamb sales for farmers was quite evenly split between the meat company, the meat company representative, and a third party stock agent.



**Figure 4.16: Main relationship for lamb sales of respondents**

## 2. Data Analysis

The following section outlines the results from some of the key steps carried out in the data analysis.

### 2.1 Missing data imputation

For the Principal Component Analysis, respondents were separated into two groups. The 'complete' group were those who answered all questions. The 'incomplete' group were those who missed at least one answer. The analysis assigns a person from the 'complete' group who gave the most similar answers as a respondent from the 'incomplete' group, and allocates the answers from the 'complete' respondent for the missing questions of the 'incomplete' respondent. If we had two respondents in the 'complete' group and one person in the 'incomplete' group, and there were three questions:

“CompletePerson1” gave scores 1, 3, 4

“CompletePerson2” gave scores 5, 5, 3

“IncompletePerson” gave scores 1, 2 and then didn’t answer the last question.

Then we use the first two questions to decide which of the “CompletePersons” answered more similarly to “IncompletePerson.” The “distance” (measure of difference) between CompletePerson1 and IncompletePerson is small as they both gave 1 for Question 1 and CompletePerson1 gave a 3 while IncompletePerson gave a 2 for Question 2. The distance between CompletePerson2 and IncompletePerson is larger as CompletePerson2 gave 5 and 5 (both large scores) and IncompletePerson gave 1 and 2 (both small scores). Mathematically distance equals the sum((difference in scores for each question)<sup>2</sup>). For the distance between CompletePerson1 and IncompletePerson, distance equals  $\text{sum}((1-1)^2+(3-2)^2) = 1$ . For the distance between CompletePerson2 and IncompletePerson, distance =  $\text{sum}((5-1)^2+(5-2)^2) = 25$ . In this case, we use CompletePerson1’s answer to fill IncompletePerson’s missing answer. Since CompletePerson1 answered 4 for Question 2, IncompletePerson’s answer will be 4 as well. In the case that several ‘complete’ respondents give the smallest distance scores for an ‘incomplete’ respondent, then the answer is picked randomly from one of those ‘complete’ respondents (Kawabata, 2011).

From the total 760 respondents, there were 528 who had completed all questions for the PCA section, 206 who partially completed questions and were manipulated to get full response. Twenty-six people answered no questions in the PCA section and were excluded from the analysis.

## 2.2 PCA Analysis Groups, Components and Variable Loadings

The tables below outline the components used in the modelling analysis for each of the four groups of questions. Each component had a loading for each variable in the group, however only loadings greater than 0.10 or the top ten loadings are displayed in the tables below. The number of components per group reflects the amount of variance explained by each component. The proportion of variance for each group explained by each component is illustrated below.

**Table 5: Percentage of variance in each group explained by each component**

	<b>Strategic Orientation</b>	<b>Selling Behaviour</b>	<b>Values</b>	<b>Relationship status</b>
<b>Component One</b>	<b>Market Focus (18%)</b>	<b>Active (24%)</b>	<b>Conscientiousness (20%)</b>	<b>Trusting (36%)</b>
<b>Component Two</b>	<b>Trader (9%)</b>	<b>Influencer (20%)</b>	<b>Convenience (16%)</b>	<b>Adversarial (12%)</b>
<b>Component Three</b>			<b>Autonomy (11%)</b>	

**Table 6: Strategic Orientation Market Focus construct variable loadings**

<b>Strategic Orientation - Market focus</b>	<b>Comp 1</b>
I only think about selling my lambs when I have lambs ready to be sold	-0.242
I enquire as to where my lamb is being consumed	0.212
I am actively involved in a producer group that is linked to a particular supermarket	0.187
I have made changes to my farming operation to better meet customer requirements	0.184
I can’t worry much about marketing because my main concerns are the animals on the farm	-0.184
I have production targets I am aiming to meet each year	0.148

I have made substantial investments on my farm that tie me to a particular supply channel or company	0.142
If the price is right I don't care who I sell to	-0.135
I plan for the long term	0.132
There is little room to change my farming operation due to natural production constraints	-0.127
If an opportunity comes up to make an additional margin I buy stock even if it is not part of my normal operations	0.124
I always use the latest technology on my farm	0.123

**Table 7: Strategic Orientation Trader construct variable loadings**

<b>Strategic Orientation - Trader</b>	<b>Comp 2</b>
If an opportunity comes up to make an additional margin I buy stock even if it is not part of my normal operations	0.517
If the price is right I don't care who I sell to	0.507
I only think about selling my lambs when I have lambs ready to be sold	0.387
I get a sense of anticipation at the beginning of each season to see what will happen in the market	0.233
I can't worry much about marketing because my main concerns are the animals on the farm	0.216
I am sceptical about the value of the latest market led supply programmes	0.198
I have made changes to my farming operation to better meet customer requirements	0.184
Production systems take priority on my farm	0.163
I have production targets I am aiming to meet each year	0.163
I plan for the long term	0.129

**Table 8: Selling behaviour Active construct variable loadings**

<b>Selling Behaviour - Active</b>	<b>Comp 1</b>
I would sell to a processing plant further away than the local plant to sell to my company of choice	0.767
If I say I will send my stock to one company I will do so even if it turns out to be better to send them somewhere else on the day	0.518
I recommend my meat company to other farmers	0.374

**Table 9: Selling behaviour Influencer construct variable loadings**

<b>Selling Behaviour -Influencer</b>	<b>Comp.2</b>
In discussions with fellow farmers are you often used as a source of advice	0.738
I feel I have the following amount of influence on lamb sales negotiations	0.467
I am tempted to try out new supply plan options	0.377
I recommend my meat company to other farmers	0.116

**Table 10: Values Conscientiousness construct variable loadings**

<b>Values - Conscientiousness</b>	<b>Comp 1</b>
It is important to be committed to one meat company	0.427
I regularly weigh my lambs or get them in to the yards to monitor when to sell them	0.381
If you were to select from several companies and supply plans available and they offered the same price would you say that you care a lot who you sell to	0.366
It's easier to let my buyer agent arrange when and where my livestock are processed	-0.343
I will only sell to a farmer owned cooperative meat company	0.336
I consistently target premiums for producing to the preferred range of weights and grades	0.283
The various companies and supply plans for lamb available are all different	0.243
I use information from my previous killing sheets to influence decisions about my next draft of lambs	0.225
You will always get better prices over a season by being able to play the market	-0.225
I would be ok joining a supply plan that requires me to change how I produce my stock	0.200

**Table 11: Values Convenience construct variable loadings**

<b>Values - Convenience</b>	<b>Comp.2</b>
It's easier to let my buyer agent arrange when and where my livestock are processed	0.630
I will only sell to a farmer owned cooperative meat company	0.587
It is important to be committed to one meat company	0.316
Prices offered by different meat companies are different	-0.248
The various companies and supply plans for lamb available are all different	-0.222
If prices are high I sell some lambs that may not meet preferred weight and grade ranges	0.202

**Table 12: Values Autonomy construct variable loadings**

<b>Values- Autonomy</b>	<b>Comp.3</b>
It's easier to let my buyer agent arrange when and where my livestock are processed	-0.540
Prices offered by different meat companies are different	-0.400
I regularly weigh my lambs or get them in to the yards to monitor when to sell them	-0.318
The various companies and supply plans for lamb available are all different	-0.306
I would be ok joining a supply plan that requires me to change how I produce my stock	-0.260
I use information from my previous killing sheets to influence decisions about my next draft of lambs	-0.248
You will always get better prices over a season by being able to play the market	-0.234
I will only sell to a farmer owned cooperative meat company	0.218
If prices are high I sell some lambs that may not meet preferred weight and grade ranges	-0.212
It is important to be committed to one meat company	0.207

**Table 13: Relationship Trusting construct variable loadings**

<b>Relationship quality - Trusting</b>	<b>Comp.1</b>
I sometimes worry that the buyer will not act in my best interests	-0.341
The buyer understands how my business fits into the bigger picture	0.325
Sometimes I feel the buyer uses their power against me	-0.307
The buyer has broken promises in the past	-0.307
I have a high level of trust in the buyer	0.297
I feel like I could call at anytime and be listened to	0.275
I make better sales decisions because of my buyer	0.272
My buyer and I share similar values	0.268
My business is important to the buyer	0.265
I depend on my buyer when making selling decisions	0.243
The buyer communicates with me as frequently as I think is necessary	0.237

**Table 14: Relationship Adversarial construct variable loadings**

<b>Relationship - Adversarial</b>	<b>Comp.2</b>
The relationship is mostly a marriage of convenience	0.478
I depend on my buyer when making selling decisions	0.436
I sometimes worry that the buyer will not act in my best interests	0.361
The buyer has broken promises in the past	0.316
I make better sales decisions because of my buyer	0.279
Sometimes I feel the buyer uses their power against me	0.278
My business is important to the buyer	0.243
The buyer offers me good prices relative to other buyers	0.207

### 2.3 Correlations between Principal Components

Principal components were examined for correlations between the different factors based on a significance value of 0.123. Significant correlations are outlined below.

**Table 15: Principal Component Analysis correlations**

	Market	Trader	Active	Leader	Consc	Conven	Auton	Trusting	Adversar
Market									
Trader									
Active	0.234								
Leader	0.260	0.163							
Consc	0.530		0.309						
Conven									
Auton									
Trusting			0.168						
Adversar		0.201				0.216			

Market scores are positively correlated with Active, Influencer and Conscientiousness scores. Producer's who have a high Market score, are likely to also have high Active, Influencer and Conscientiousness scores. Trader has a positive correlation with Influencer and Adversarial scores. Active has positive correlations with Conscientiousness and Trusting. Convenience has a positive correlation with Adversarial. Producers who are active in their selling approach are more likely to have a trusting relationship. Producers who prefer the Convenience of an agent organising their sales,

are more likely to see this as an adversarial relationship. The correlations mean that in the models where one of the components is at a decision branch, elements of the other components may also have a role in their partitioning.

### 3. Principal Component Analysis

Principal Component Analysis (PCA) was carried out for questions on strategic orientation, selling behaviour, values, and relationship status. The following section outlines the meaning of each of the constructs.

**Table 16: Principal Component Analysis**

<b>Strategic Orientation</b>	<b>Selling Behaviour</b>	<b>Values</b>	<b>Relationship status</b>
<b>Market Focus</b>	<b>Active</b>	<b>Conscientiousness</b>	<b>Trusting</b>
<b>Trader</b>	<b>Influencer</b>	<b>Convenience</b>	<b>Adversarial</b>
		<b>Autonomy</b>	

#### 3.1 Strategic orientation

For the strategic orientation group, two components were found to explain the most significant amount of variance in responses. The first component is Market Focus and relates to variance in responses on how much a producer considers what happened to their lamb after selling it, and how important the producer considers marketing relative to production activities on their farm. The second component is Trader and relates to whether or not a producer finds it valuable to engage in seeking out the best price, and whether they are flexible in their business operation to take up opportunities.

*“Basically I try to sell lambs when not too many others are and so get a better price”  
Producer, North Island*

Interestingly in this Principal Component analysis, no component relates to a Production focus, as was found in previous strategic orientations of producers. The production variables had a low loading in the two components, which illustrates a low level of variance between producers. This indicates that while production activities are generally important for all producers, it is the extent that producers consider the importance of marketing and trading that differentiates them the most.

#### 3.2 Selling behaviour

Two components are found to explain the most significant amount of variance in responses for the selling behaviour group. The first relates to how active a producer is in supporting and recommending their preferred meat processing company. The second component measures how the producer perceives their level of bargaining power, leadership, and openness to new marketing plans.

#### 3.3 Values

Three components are found to explain the most significant amount of variance in responses for the values group. The first explains the majority of the variance and measured how conscientious a producer is in relation to how much thought and effort goes in to making marketing decisions for their lamb, and how much the producer tries to produce lambs to preferred specifications. Producers with high Conscientiousness scores are much more likely to be willing to make changes to their business to improve the marketing of their lamb, and consider that differences exist between meat companies and the prices offered by companies.

The next component was Convenience. Producers with high scores for this factor prefer to use a third party agent to take care of the marketing arrangements, are not overly concerned with the quality of their lambs, and do not see value in spending time on marketing activities. The third component of Autonomy differed from the second primarily on the variables that they prefer to make their own decisions rather than use a third party agent, and more concern is placed on lamb quality. Both components had positive loadings for importance of being committed to a company, and selling to a cooperative. They both had negative loadings for perceived differences between companies and prices offered, which means if a producer believed differences exist, they would have a lower Convenience and Autonomy scores.

### 3.4 Relationship

Two components are found to explain the most significant amount of variance in responses for the relationship group. The responses for this group of questions are a combination of responses to questions based on the producer's main relationship for selling lambs (the meat company, a meat company representative, or a third party agent). The first component measured the quality of the relationship a producer had with their main sales relationship based on high levels of integrity, competence, honesty, and trust. The second component measures how adversarial the relationship is. A high loading for this factor is put on seeing the relationship as a necessity due only to the level of dependency the producer has on the other party.

*"I'm just looking for a fair deal – we both need to make money, and should be trying to maximise our returns together", Producer, King Country, North Island*

## 4. Regression Modelling

Three regression partitioning models are created based on differences in producers selling behaviour. The models are created in an attempt to identify differences in producers' orientation, selling behaviour, values, relationship quality, and demographics based on their level of commitment and switching behaviour.

### 4.1 Regression Modelling Variables

This section outlines the dependent and independent variables used in the three models.

**Table 17: Model dependent variables**

	Model One	Model Two	Model Three
<b>Dependent Variable</b>	Commit/Not Commit	High Commit/Low Commit	Not Commit + Switch /Not Commit + Non-Switch

**Table 18: Model independent variables**

<b>Independent variables (for all three models)</b>	
<b>PCA Component Scores</b>	Market, Trader Active, Influencer Conscientiousness, Convenience, Autonomy Trusting Adversarial
<b>Relationship score for quality (out of ten)</b> <b>1: Low Quality</b> <b>10: High Quality</b>	1-10



<b>Demographics</b>	
Location	Otago-Southland East Coast
Business Cycle	1:Entry 2:Consolidation 3:Growth/Expansion 4:Exit
Age	1:20-29 2:30-39 3:40-49 4:50-59 5: 60-69 6: 70+
Education	1:<1 year 2:1 3:2-3 4:4+
Debt as percentage of income	1: 0-9% 2:10-19% 3:20-29% 4:30-39% 5:40+%
Lamb sales as proportion of income	1:0-19% 2:20-39% 3:40-59% 4:60-79% 5:80-100%
Proportion of non-farm income as percentage of gross income	1:0-10% 2:10-20% 3:20-40% 4: 40-60% 5:60+%
Class	1: Hill country 2: Breeding Finishing 3:Intensive
Effective Hectares	1:0-250 2:250-500 3:500+
Total stock units	1:0-2,500 2:2,500-5,000 3:5,000+
Sheep Stock units as proportion Total Stock units	1:0-19% 2:20-39% 3:40-59% 4:60-79% 5:80-100%
Total annual lambs sales	1:0-999 2:1,000-1,999 3:2,000—4,999 4:5,000+
Farm Owner-operator	1: Yes 2:No
Number of people working on farm (including self)	1:1 2:1-2

	3:2-4 4:4+
Experience (years farming)	1:0-5 2:5-10 3:10-20 4:20-30 5:30+

The models were created using Rpart programming and allocated producers to an end node based on the greatest differentiation between producers at each point of the regression-based partitioning trees. The models split producers based on the factors that cause the most differentiation between producers of each binary group at each branch for each model. Producers continue to be split until they cannot be significantly differentiated based on the producers' constructs scores or until they reach the limit of final node numbers. The partitioning was based on a specified minimum split size of 60 and end node size of 30 for model one, and 40 and 20 for models two and three.

For example in Model One (Figure 4.17) at the top branch out of the 734 producers 45 per cent are committers. The largest cause of differentiation between the two groups (Committers and Non Committers) is the producers' scores for Conscientiousness. Three-hundred and thirty three have low Conscientiousness scores of which 23 per cent commit, while of the 401 that have high Conscientiousness scores 63 per cent commit. At the left branch (Low Conscientiousness scores), Location is the only factor that can further differentiate Committers from Non Committers out of those with Low Conscientiousness. Out of the 333 that have a Low Conscientiousness score, 196 are in the East Coast, and 137 in Otago-Southland. Out of both of those groups, 13 per cent of the 196 in the East Coast are Committers, and 38 per cent of the 137 in Otago-Southland are Committers.

In the commentary for each models, producers are partitioned based on whether they have a 'high' or 'low' (and in some cases a 'medium') score for the components. These terms have not been defined based on the level of the score, but are rather used for simplicity when describing one group of producers that have been partitioned to one side of a tree-branch relative to the other. Due to the standardisation of the PCA scores, each component will have an average score of around zero, with half of the producers having positive scores, and half having negative scores. So while the value that partitions producers may be higher or lower than the average (at zero), producers with scores greater than the value of the partition are deemed to have 'high' scores and those that have scores less than the drafting value are deemed to have 'low' scores.

The first binary model examines differences between producers that always commit (Committers) and those that do not always commit (Non Committers - a combination of those that have never committed and those that sometimes commit). This split in producers is used to determine what is different about those producers that are consistent committers compared to those that never do or have once or twice in the last five years. The second model analyses different behaviour of producers that do always commit, by comparing the difference between those that make a high commitment (High Committers) and those that make a low commitment (Low Committers). The third model analyses behaviour of Non Committers, by comparing the difference between those that switch companies (Switchers) and those that do not switch (Non Switchers). A breakdown of the total number of sampled producers in each category is provided in Table 19.

**Table 19: Outline of models**

Model One		Model Two		Model Three	
Commit	328	High Committers	131	Switchers	209
Non-Committers	406	Low Committers	193	Non-Switchers	189
<b>Total</b>	<b>734</b>	<b>Total Commit</b>	<b>324</b>	<b>Total Don't Commit</b>	<b>398</b>
NA	1		5		9

**Note: Totals do not equate due to a number of NAs in each model.**

## 4.2 Model One

The first regression model Figure 4.17 examines differences between the 328 Committers and the 406 Non-Committers. Non Committers are those producers that have not always committed to one company in the last five years. This includes some producers that have committed once or twice, but for some reason are not full committers. These “Sometimes” committers are analysed separately in more detail in the following section on reasons for committing, and differences in influences of decisions and behaviour. However for simplicity and to allow binary regression modelling, they are included in the Non Committers category in this section. This allows the comparison of what makes consistent Committers different from others.

The largest cause of differentiation is based on the producers score for the Conscientiousness component (Figure 4.17). Producers are drafted initially by whether or not they have a Conscientiousness score below  $-0.06583$ . Initially from the 734 producers, 333 have low Conscientiousness scores and are split to the left. Of these producers 23 per cent are committers. To the right are 401, of which 63 per cent are committers. Those in the left-hand branch are then grouped based on whether or not producers are located in the North or South Island. Similarly those with a high Conscientiousness score are secondarily grouped based on their location. At the left-hand side second branch, there are two final nodes. If a producer has a low Conscientiousness score, and is located in the East Coast, they end up at node A and there is a probability of 0.13 that they commit. If a producer has a low Conscientiousness score, and is located in Otago-Southland, they end up at node B and there is a probability of 0.38 that they commit. For each group it is possible to compare the likelihood that they will commit given they are in a particular Island and with a high or low Conscientiousness score. There is more chance of being a Committer at both high and low Conscientiousness if a producer is in Otago-Southland.

**Table 20: Comparison of commitment**

Probability will commit	East Coast	Otago-Southland
<b>High Conscientiousness</b>	45%	74%
<b>Low Conscientiousness</b>	13%	38%

Producers with a high Conscientiousness score are also secondly split by island, with those in the East Coast entering the left-hand branch and those in Otago-Southland in the right-hand branch. Those in Otago-Southland are then at final node C and this group has a 74 per cent chance of being a Committer. The East Coast producers are then split again on their level of Conscientiousness. Those with a very high Conscientiousness score are partitioned and enter final node D where they have a 71 per cent chance of being a Committer. Producers with medium Conscientiousness scores, they enter the final left-hand branch and are partitioned based on their score for the Influencer component. Those with a high Influencer score are partitioned to the left and have a 19 per cent chance of being a committer. Those with a low Influencer score are partitioned to the right and have a 52 per cent chance of being a Committer.

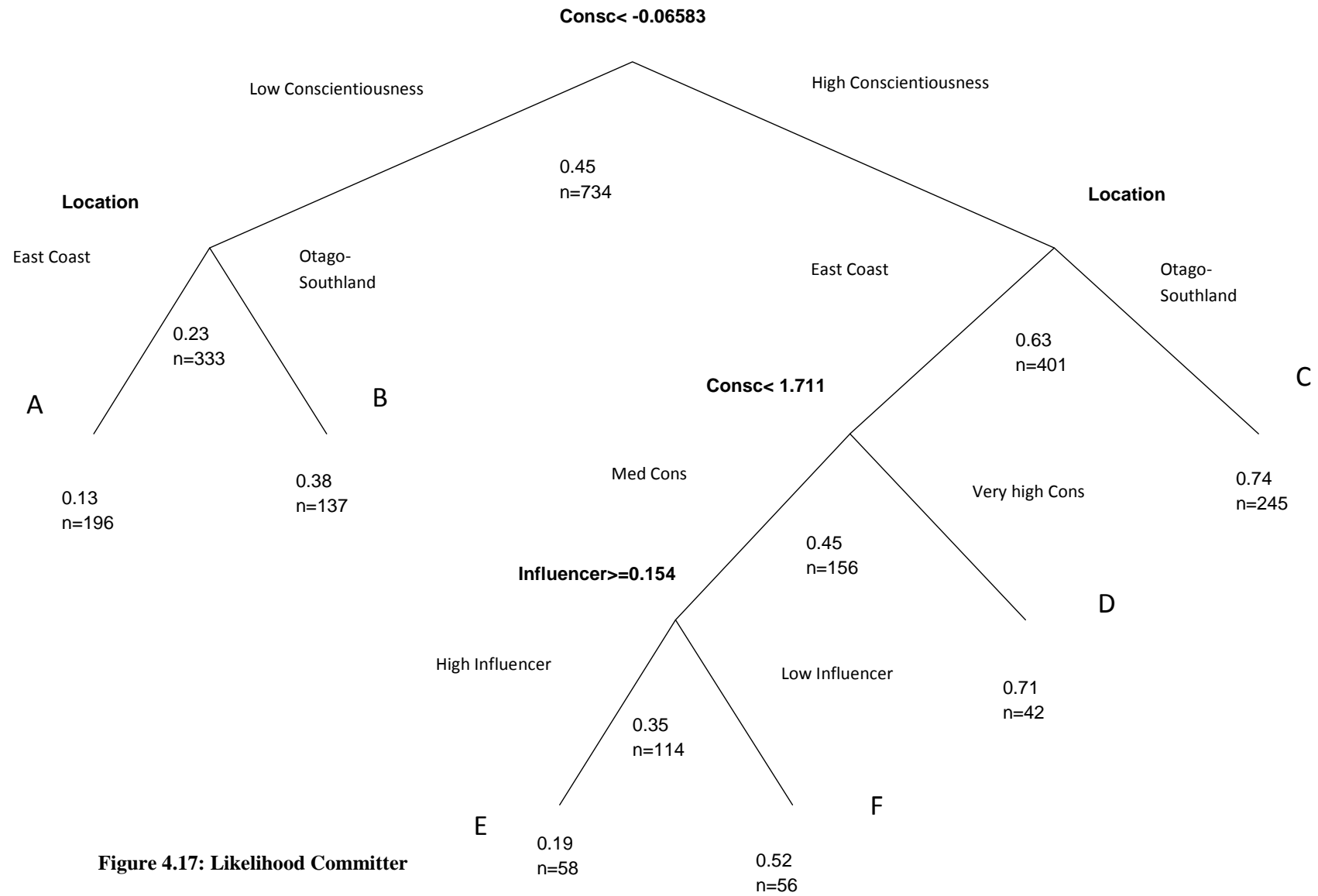


Figure 4.17: Likelihood Committer

Given that there is a 45 per cent chance from the total sample that a producer will be a Committer, it is useful to analyse situations where producers are much more or less likely to commit. In cases where a producer is from Otago-Southland, and has a high Conscientiousness, they are allocated to nodes that have a higher chance of being a committer. Therefore from this we can conclude that those producers that commit are more conscientious in their selling decisions and more likely from the Otago-Southland. Those with a high Influencer score are less likely to commit and measures the effect of how high bargaining power and leadership status reduces the chance of committing. The Influencer score also measured the willingness to try new marketing supply options. Either this variable is overpowered by leadership status or bargaining power, or while producers may have high willingness to try new programmes it may not translate into increased commitment of lambs.

Given the importance of the Conscientiousness and Location it is useful to look at the differences in numbers of producers in each group. There is a higher proportion of producers in Otago-Southland with a high Conscientiousness score (64%) compared with the East Coast (44%).

**Table 21: Island and Conscientiousness comparison**

Proportion of respondents in each group	East Coast	Otago-Southland	Total
High Conscientiousness	156 (44%)	244 (64%)	400 (55%)
Low Conscientiousness	196 (56%)	137 (36%)	333 (45%)
Total	352 (100%)	381 (100%)	733 (100%)

The level of Conscientiousness correlates with the principal components Market and Active which measures how market focused the producer is and how active they are in their selling behaviour. This may mean that the importance of Conscientiousness has overpowered the Market and Active components, and while Market and Active may also be important, their importance is incorporated through the Conscientiousness component.

Caution needs to be taken, as it could be that producers that commit need to be more conscientious to fulfil their commitments, rather than the conscientiousness tendencies leading to a desire to commit. Nevertheless the model is designed to be exploratory in nature rather than predictive and therefore it is useful to understand the strength of the relationship between Conscientiousness and commitment. The average scores for the Conscientiousness component by Island and whether or not producers commit are outlined in Table 22. On average Otago-Southland producers have higher Conscientiousness scores than East Coast producers in both cases of committing and not committing (i.e. a lower negative score when not committing). Therefore overall Otago-Southland sample participants are more conscientious. There is a greater level of deviation in scores of Non Committers.

**Table 22: Conscientiousness score on Island and Commitment**

Mean Conscientiousness score (Standard Deviation)	East Coast	Otago-Southland
Commit	0.816 (1.50)	0.863 (1.57)
Non Commit	-0.880 (1.67)	-0.361 (1.87)

### 4.3 Model Two

This section compares producers that enter into a high or low level of buy-in to a commitment to one company. Table 23 and Table 24 illustrate in more detail some of the differences between levels of commitment entered into by different producers. Pricing specifications refer to the method by which producers elect to be paid for their lambs. The schedule price is the open market price per kilogram carcass weight that is released weekly by companies. This is usually emailed to farmers that are suppliers of meat companies, or posted on company websites. Producers can be paid premiums above the schedule price based on commitment or meeting other specifications. If producers commit supply or enter contracts, there is the option of fixing the price per kilogram or per head for a certain period of time, or for the year. This option is not generally popular among farmers, as in the past the schedule price has been as high as or higher than the contract price. Some companies offer a minimum price, which can increase if the schedule price increases.

The majority of producers who always commit sell some or all lambs on the schedule price. Seventy-six producers (out of 324 total Committers analysed in this model, or 23%) sell some or all lambs under a fixed price. Another ten producers sell some or all lambs under a minimum price system.

**Table 23: Commitment pricing specifications**

Pricing specification	Number	Proportion of people that commit
Schedule plus premiums	239	74%
Schedule	64	20%
Fixed price per kilogram	61	19%
Fixed price per head	15	5%
Minimum price	10	3%

**Note: Percentages do not add to 100% as some producer's ticked more than one option.**

When deciding whether to commit or not, producers will need to consider the level of commitment they give to processors. Stringency in enforcing commitment varies between companies, ranging from no action, to losing preferential processing space access, or losing premiums. If a producer breaks commitment, there are generally few specific penalties, as commitments are loosely based around mutual agreement rather than contractual obligations. When committing lamb supply, producers are asked at the start of the season (around October) to provide an estimate of the number of lambs they will be able to commit over the following season. Sometimes an estimate of when these lambs will be ready for slaughter is also required. This may be a monthly or weekly specification. For more stringent programmes, producers may be required to meet specific weight, fat grade, or breeding and feeding specifications. Producers then will attempt to meet these estimated lamb numbers, dates and other requirements. There may be a review of estimated delivery half-way through the season, or at more regular interviews based on a producer's updated information (e.g. lambing percentages, pasture and lamb growth rates). Companies may provide flexibility in terms of numbers and dates specified. For example farmers may be allowed to supply a week earlier or later than specified, or 10 per cent more or fewer animals than specified in a week without any repercussions. This flexibility is especially critical in years where climatic conditions are extreme or unpredicted. While in some cases the more stringent the requirements, the higher the premiums and rewards on offer, this is not always the case. Some farmers commit lambs to varying degrees of specificity, and receive the schedule price.

**Table 24: Commitment delivery specifications**

Requirements	Number	Proportion of people that commit
Annual delivery	109	34%
Monthly delivery	89	27%
Minimum number delivered	85	26%
Weight specification	80	25%
Weekly delivery	57	18%
Fat grade specification	52	16%
Feeding requirement	9	3%
Breeding requirement	8	2%

**Note: Percentages do not add to 100% as some producer's ticked more than one option.**

The most flexible commitment option is to solely commit an annual number of lambs to one company. While 109 farmers ticked this box, it can be assumed from the previous question that the 324 that ticked always or almost always commit, make an annual commitment. It could however be the case, that some of those 324 only commit lambs for a shorter period of time such as over summer, over winter, or monthly in advance. From those 324 producers, 89 (27%) then specify numbers by month, and 57 (17%) also commit to a weekly number. A minimum delivery of numbers is also a popular commitment option although this would usually be tied in to an annual commitment. Meeting weight range specifications is the next most common commitment option with 80 (24%) of committed producers meeting weight specifications. Fat grades specifications is slightly less prescribed with 52 (16%) farmer aiming to meet this requirement. Feeding and breeding requirements are often linked to very specific supermarket programmes, and a low number of producers opt in to these high requirement options.

The second regression partitioning model **Error! Reference source not found.** compares producers that commit to a high level (High Committers) with those that have a low level of commitment (Low Committers). A producer was defined as a High Committer (HC) if they ticked that their commitment included higher specifications of price or delivery. These include any of a fixed price (per kilogram or per head), meeting monthly or weekly delivery of lambs, meeting weight and fat specifications, and breeding or feeding specifications. Low Committers (LC) commit to an annual supply arrangement with schedule prices, although they could also be meeting weight specifications, and a minimum number supplied. High committers may also receive schedule prices, but it is one of the higher specifications which determine whether they are High Committers or not. From the 324 Committers, 193 are allocated to the Low Committers, and 131 to the High Committers. This means that at the top branch of the model a producer has a 60 per cent chance of being a Low Committer, and 40 per cent chance of being a High Committer.

The largest cause of differentiation as to whether or not producers are High Committers is based on the producers score for the Market component (**Error! Reference source not found.**). The Market component is a measure of to what extent the producer is interested in where their lamb is consumed and who they sell to, and changes made on-farm to better meet market requirements. The Market component score has a positive significant correlation with the Influencer, Active and Conscientiousness components scores. This means that the other components could also cause a large degree of differentiation between producers but that their effect is overpowered by the Market component.

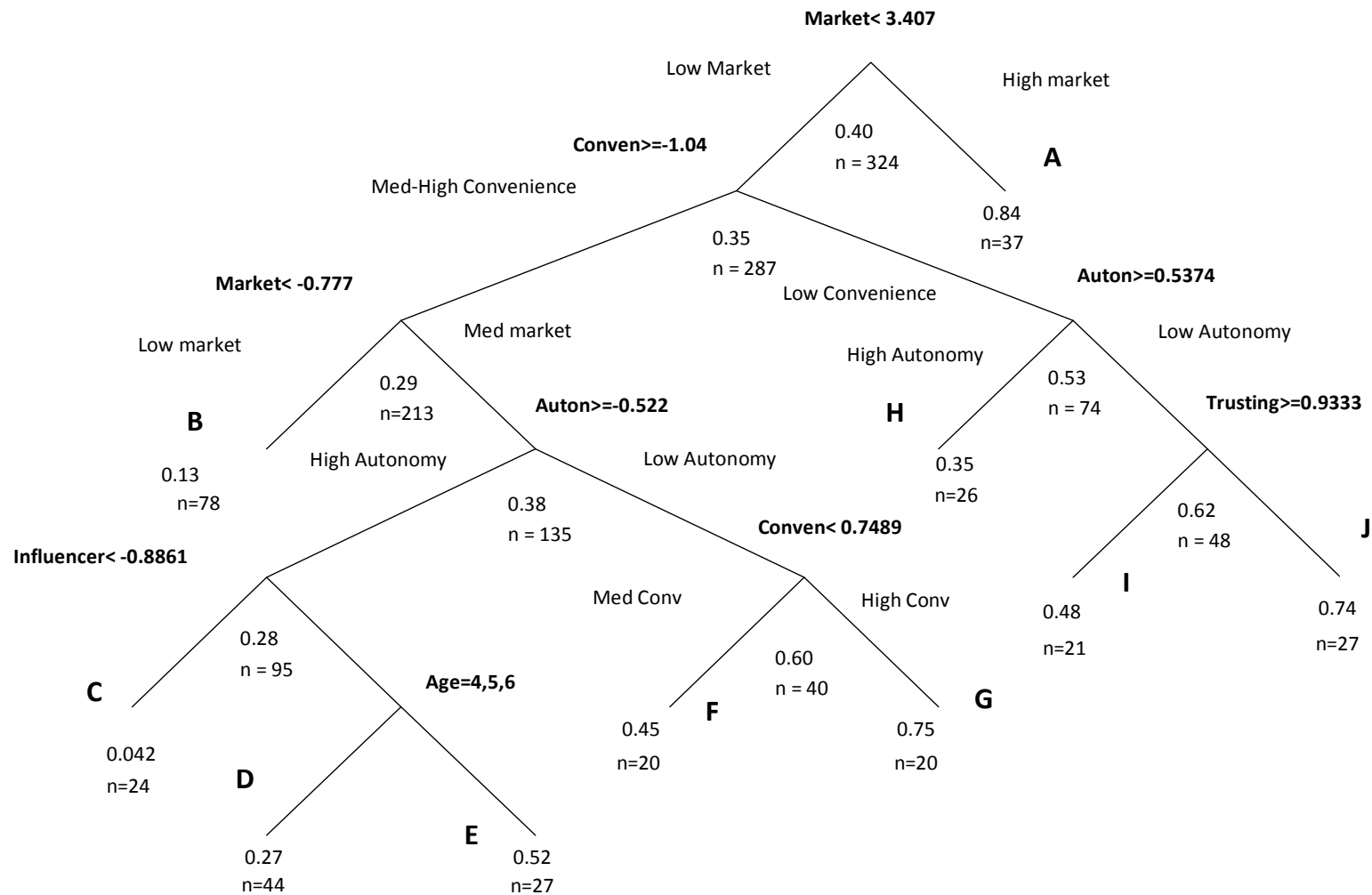


Figure 4.18: Likelihood High Committer (if Committer)



Producers are drafted initially by whether or not they have a Market score below 3.407. Producers with a very high Market score enter final Node A, whereby this small number of producers has an 84 per cent chance of being a High Committer. Producers with a lower Market score are then partitioned based on their Convenience score. Producers with high Convenience scores prefer to let an agent take care of selling arrangements, do not see value in comparing different companies or prices, and do not like to spend a lot of time weighing lambs or targeting premiums and weight ranges. If producers have a high Convenience score, they are drafted to the left, where they are then partitioned on their Market score. Those with a very low Market score are allocated to final node B and have only a 13 per cent chance of being a High Committer.

Producers with a low first branch Market score, and a high Convenience score, and then a medium third branch Market score (low in the first branch, but then high in the second Market branch), are then partitioned by their Autonomy score. The Autonomy score is orthogonal to the Convenience score, with the main difference being related to whether or not a producer prefers to use a third party agent or not. Producers with a high Autonomy score at this branch are then partitioned based on their Influencer score. The Influencer score relates to the producers perceived level of bargaining power, status amongst other producers, and willingness to adopt new supply options. If the producer has a low Influencer score at this branch, they are allocated to node C and have almost no chance of being a High Committer. If they have a high Influencer score, they are drafted to the right, and are then partitioned based on their age. Producers in the groups above 50 years of age are partitioned to node D and have a 27 per cent chance of being a High Committer. Those producers under 50 years of age are partitioned to node E and have a 52 per cent chance of being a High Committer.

For producers that have a low original Market score, high Convenience score at the second branch, medium Market and low Autonomy scores, are then partitioned based on their Convenience score again. Those with a medium Convenience score (high in the first Convenience branch, but not high in second Convenience branch) are allocated to Node F and have a 45 per cent chance of being a High Committer. These producers have a higher score for Convenience than those that were partitioned to the right at the first Convenience branch, but are still average to below average (all scores for PCA's have been standardised and so the average score for each PCA is 0). Those with above average scores for Convenience are allocated to node G and have a 75 per cent chance of being a High Committer.

It is of interest to note that producers with high Convenience scores are more likely to be High Committers, but it could be due to the low Autonomy and medium Market scores in combination with a preference for convenience of the buyer deciding that the producer ends up making high commitments. Producers with low Autonomy and medium Convenience scores may have medium scores for the role of the agent and are less worried with autonomy or convenience. This group have a similar chance of being a High Committer as at the initial branch and therefore represent a similar group of producers as the general sample.

Those with a low Convenience score at the second branch are drafted to the right at the second node, where they are then partitioned on their Autonomy score. Producers with a low Convenience score and a high Autonomy score end up in Node H with a 35 per cent chance of being a High Committer.

Producers with a low Convenience score and a low Autonomy score are then partitioned based on their score for the level of Trusting relationship. Those with a high score for Trusting relationship are allocated to node I and have a 48 per cent chance of being a High Committer. Those with a lower Trusting relationship score are allocated to node J and have a 74 per cent chance of being a High Committer. It is of interest that producers with higher Trusting relationship scores are less likely to be High Committers. It may be that those that have a high commitment consider the relationship less

important because they are more concerned with other aspects of the transaction. Producers that are Low Committers may consider the relationship aspect as a more important part of the transaction.

*“I’ve got a very good relationship with my buyer – when he says it’s going to happen, it happens – either to get space or move stock when needed.” Producer, Southland, South Island*

While there are 10 final end nodes, the model illustrates the high influence of a producers PCA scores for Market, Convenience and Autonomy on the propensity of a producer to be a high or low committer. Not only do the first two determine the drafting from the first two branches, but they also have an effect further down the model at other branches as well. In general the higher the Market score, the more likely the producer is a High Committer. At the second branch, there is a 35 per cent change that a producer is a High Committer. If a producer has a high Convenience score they move to the Market branch and have a 29 per cent chance, while a low Convenience score goes to the Autonomy branch and has a 53 per cent chance. This illustrates that high Convenience scores reduce the chance that a producer is a High Committer, even though the opposite rule applies further down the tree. Producers with a high Autonomy score are less likely to be High Committers as illustrated at the two branch splits based on Autonomy.

High Committers are more likely to have low Convenience and Autonomy scores. These components are orthogonal, and it could be that producers with low scores for both do not value the use of a buyer to organise sales, but do not have a strong desire to have full control of decisions themselves either. This is illustrated through their higher level of commitment which places increased restrictions on their selling activities and reduced their control relative to Low Committers. Variables of positive importance in the Convenience and Autonomy components are the belief in the importance of committing to one company, and selling to a cooperative. So these cannot have a major influence on being a High Committer. Negative loadings for the two components include the perception that prices are different between companies and that there are differences between companies. These beliefs are therefore important in differentiating High Committers from Low Committers.

Given that there is a 40 per cent chance from the top branch that a producer will be a High Committer it is particularly interesting to analyse nodes where this percentage differs considerably. The first instance is at node A, where a high Market score remarkably increases the chance of being a High Committer. Similarly at node B a very low Market score significantly reduces the chance of being a High Committer. At node C with a medium Market score, medium-high Convenience, high Autonomy, and a low Influencer score, there is almost no chance of being a High Committer. At the branch for node F and G a high Convenience score increase the chance of being a High Committer. At the branch for node I and J, a lower Trusting score increases the chance of being a High Committer.

#### 4.4 Model Three

The third model **Error! Reference source not found.** compares Non Committers that switch companies (Switchers) versus those that do not switch (Non-Switchers). A producer is defined as a Switcher (NCS) if they do not commit and they had switched companies at all in the last five years. Those that had never switched companies were allocated to the Non-Switchers (NCDS). This binary partitioning allows the comparison of producers that are willing and able to switch companies, compared with those that have not. Non Switchers are either content with their current company, not dissatisfied enough to switch or are unable to switch. Yet these producers are not fully committed to one company either. Thirty per cent of Non Committers have committed once or twice in the last five years (the “Sometimes Committers”), however they are not fully committed to one company as the Committers category are.

A breakdown of the number of producers in each category is outlined in Table 25. The table and **Error! Reference source not found.** illustrate that from the first branch there is a 53 per cent chance that the Non Committer will be a Switcher. If a producer has never committed they have a 49 per cent chance of being a Switcher. However if the producer has Sometimes committed, there is a higher chance (60%) they have switched companies in the last five years. This could demonstrate that those producers have potentially switched companies and at the same time tried out committing, or have switched companies after trying to commit.

**Table 25: Breakdown of Never and Sometimes Committers**

	Never	Sometimes	Total
<b>Switcher</b>	136 (49%)	73 (60%)	209 (53%)
<b>Non Switcher</b>	139 (51%)	50 (40%)	189 (47%)
<b>Total</b>	275 (100%)	123 (100%)	398 (100)

The largest cause of differentiation as to whether or not producers are Switchers is based on the producers score for the Convenience component. Non Committers are drafted initially by whether or not they have a Convenience score above 1.746. For producers with a high Convenience score, they enter the second branch where they are partitioned based on their location. If they are in Otago-Southland at node A, they have almost no chance of being a Switcher. If they are in the East Coast at node B, they have a 45 per cent chance of being a Switcher.

If producers have a lower Convenience score they are drafted to the right, and are then partitioned on their Trader score. The Trader score relates to how willing the producer is to take up opportunities to make margins, and how important price is in their selling decisions. The Trader score has a positive significant correlation with Influencer and Adversarial components. Therefore the Influencer and Adversarial components may also explain a high degree of difference between producers, but their effect is overpowered by the Trader component. If a producer has a low Trader score, they are partitioned to the left, and then partitioned based on their Conscientiousness score. There is a correlation between Conscientiousness scores and Market and Active scores. If they have a high Conscientiousness score, they are partitioned to the left, and are then split based on their Influencer score. A high Influencer score ends in node C, where producers have a 68 per cent chance of being a Switcher. A low Influencer is then partitioned based on their score for Cycle, which groups producers based on their business cycle. If producers are in the Growth/Expansion cycle (Cycle 3), they are split to the right at node D and have a 58 per cent chance of being a Switcher. If they are in the other business cycles of entry, consolidation or exit (Cycle 1, 2 or 4), they are then partitioned again on the Conscientiousness score, with those having a higher Conscientiousness score partitioned to the left at

node E and have a 18 per cent chance of being a Switcher. Those with a medium Conscientiousness score are partitioned to the right at node F and have a 42 per cent chance of being a Switcher.

Those with a low Trader and a low Conscientiousness score at the third branch are then partitioned based on their grouping for the Education demographic. If they are in the group one which is less than one year tertiary education they are partitioned to the left at node G, and have a 56 per cent chance of being a Switcher. If they have one or more years of tertiary education, they are partitioned to the right at node H and have an 85 per cent chance of being a Switcher.

If a producer has a high Trader score at the second branch, they are then partitioned based on their Conscientiousness score. If they have a high Conscientiousness score they are partitioned to the left and at node I they have a 39 per cent chance of being a Switcher. If they have low Conscientiousness score, they are partitioned to the right, and are then split based on their Autonomy score. If they have a low Autonomy score they are partitioned to the right at node J and have a 96 per cent chance of being a Switcher. If the Autonomy score is high, producers are then partitioned based on their Market score. If their Market score is low, they are drafted to the right at node K and have an 83 per cent chance of being a Switcher. If the Market score is high, they are then partitioned based on their business cycle group. If they are in business cycle of entry, growth or exit (Cycle 1, 3 or 4) they are drafted to the left and at node L have a 35 per cent chance of being a Switcher. If they are in business cycle consolidation (Cycle 2) they are allocated to node M and have a 67 per cent chance of being a Switcher.

The factors that have the most importance determining how likely a producer is to Switch, given that they do not commit, are their scores for Convenience, Trader, and Conscientiousness. Lower scores for Convenience, and Conscientiousness and higher scores for Trader increase the likelihood a producer will switch. Producers with high Convenience scores do not value time spent searching and evaluating selling channels, and are therefore unlikely to Switch often. Non Switchers with high Conscientiousness scores see it as important to stay with one company, and think about who they are selling too. However, these producers in this model are not fully committing to one company. So while they are content staying with one company, have made a conscious decision about who they sell to, and are less likely to Switch than other Non-Committers, for some reason they still prefer not to commit. Producers with a high Trader score, see value in searching out the highest price, and are not concerned with which company they sell too. Producers with high Trader scores would be the hardest group to get to commit to one company, as they enjoy the searching and selling process, either through an agent (with low Autonomy scores), or by themselves (higher Autonomy scores). Areas of secondary importance are Location, Influencer score, Market focus and Business cycle. Switchers are more likely in some cases to be located in the East Coast, have higher bargaining power and influence, higher market focus, higher education and be in the growth or consolidation business cycle.

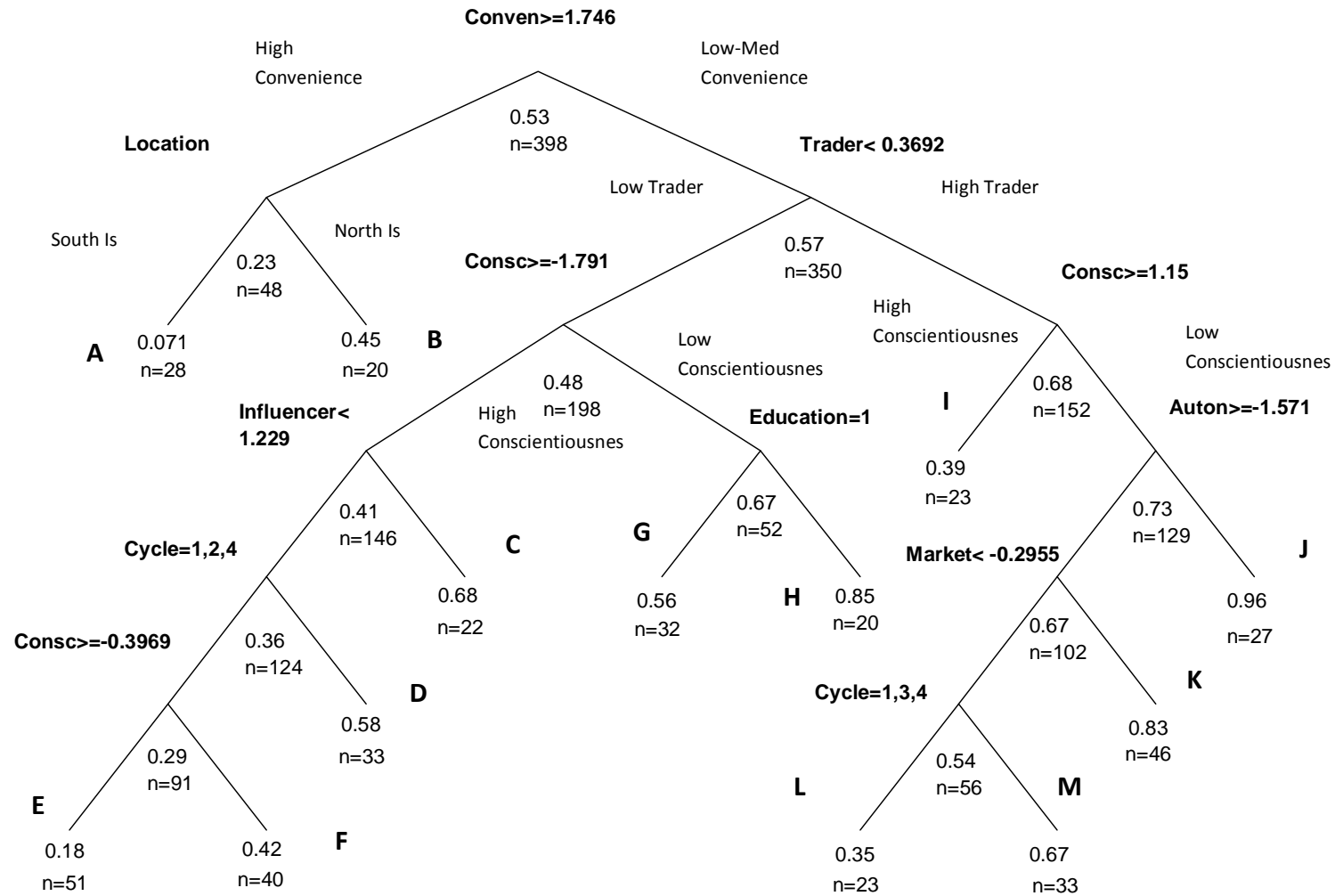


Figure 4.19: Likelihood Switcher (if Non-Committer)

## 5. Reasons for Selling Behaviour

The following section outlines the most common reasons for each type of selling behaviour. The section also outlines the differences in main reasons producers commit or not between five groups. The first groups to be compared are those that have committed at least once in the last five years, and are namely High Committers, Low Committers, and Sometimes Committers. The other set of groups is those that never commit, and amongst them Switchers are compared to Non-switchers. It is proposed that the different groups within each set will have different reasons for their behaviour. The reasons relate to the attributes of each option that appeal most to each group. Refer to Appendix D for a table of observed and expected responses, residuals and the Chi-square test statistics.

### 5.1 All Committers

Respondents were asked to rank three variables as their first, second and third reasons for choosing to commit from the following options:

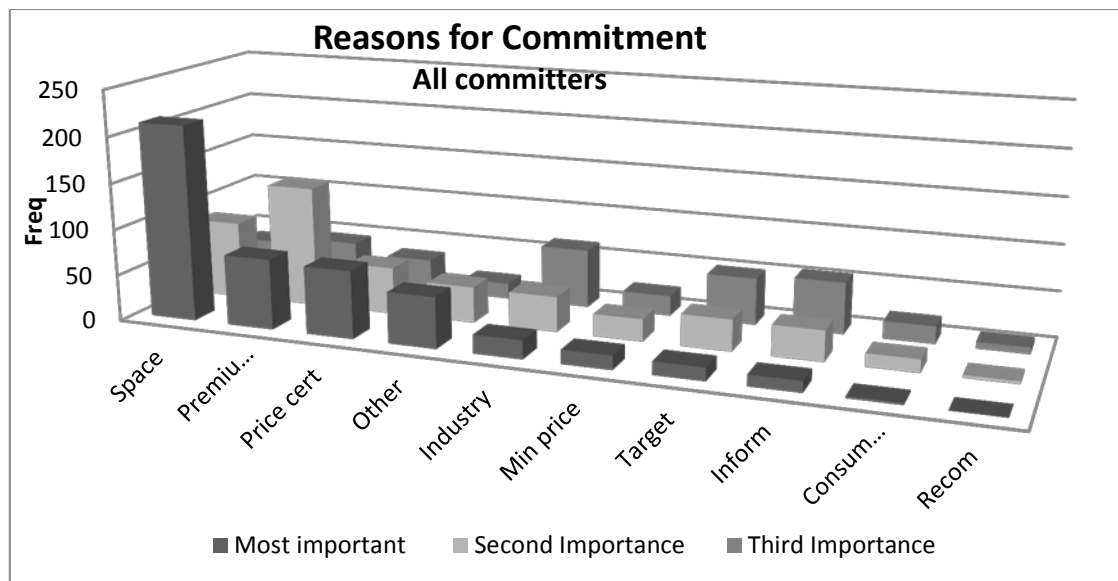
- Increased information and communication (Information)
- To become closer to the consumer (Consumer)
- Guaranteed processing space (Space)
- Premiums (Premiums)
- Recommended by other farmers (Recom)
- For the good of the industry (Industry)
- To give my business set targets (Targets)
- Price certainty (Price cert)
- Guaranteed minimum price (Min price)
- Other (Other)

The primary reason most producers choose to commit their lamb supply is to secure processing space. This is an interesting result given that the general consensus within the industry is that there is processing plant overcapacity, and that for greater efficiencies, more plants need to close. Some producers obviously are still concerned about securing access to processing space when they need it.

*“When it comes to selling lambs we have found if it gets dry you have to sell. If you are not loyal to one meat company you can’t get lambs away. They have you over a barrel. We can’t shop around.” Producer, Otago, South Island*

Premiums available is the second most common primary reason, and is also the most common secondary reason with 76 (16%) ranking it most important and 131 (29%) ranking it second in importance. Price certainty was the third highest most important ranked reason. For the good of the industry was the popular as a third reason with 64 producers (18%) ranking it third.

The ‘Other’ category ranked quite high for committers as the fourth most common primary reason for commitment. Most popular answers in ‘Other’ category included being a shareholder in the company (10), for the good of the company (9), because it was considered a good company by the producer (7) and because of a good relationship with the company livestock agent (7). This represents the element of commitment that comes from a strong relationship between producers and processors or buyers.



**Figure 4.20: Reasons for commitment Always Committers**

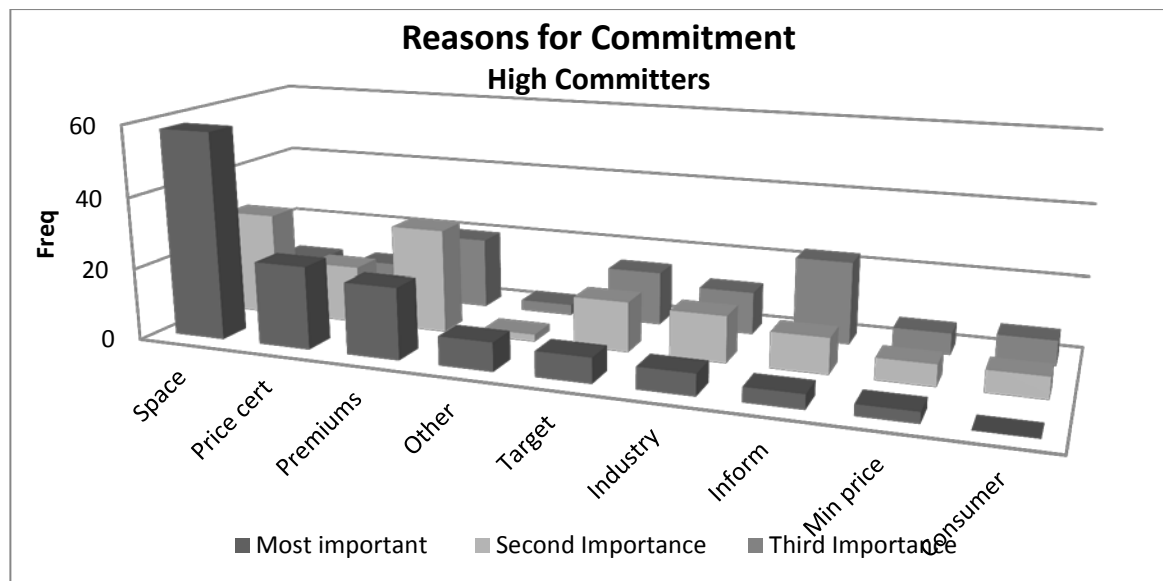
Initially all three groups in the Commit set are analysed together to examine whether there is a significant difference in rankings between questions. Once this has been established then individual groups are analysed to determine what differences there are in rankings between the groups. A Pearson's chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are Committers. The relationship between these variables was significant  $X^2(18, N = 479) = 305, p < .001$ . This means that rankings are not independent to the questions.

For the first ranking, guaranteed processing space was the variable that contributed most to the Chi-square test. For the second ranking, premiums available are significantly the most common response. For the third ranking, processing space was also the most variable that contributed most to the Chi-square test.

## 5.2 High Committers

The primary reason High Committers commit is also for processing space with 58 High Committers (45%) ranking this first. Price certainty is more important to High Committers than overall committers, and is the second highest reason. However premiums are also very important to High Committers, and have a higher overall ranking with a greater number of High Committers ranking premiums as second or third than price certainty. Increased information is the most popular third reason with 23 producers (22%) ranking this as third.

*"I commit to build the company and to support its commitment to the linkage between supplier and consumer" Producer, Otago, South Island*



**Figure 4.21: Reasons for Commitment High Committers**

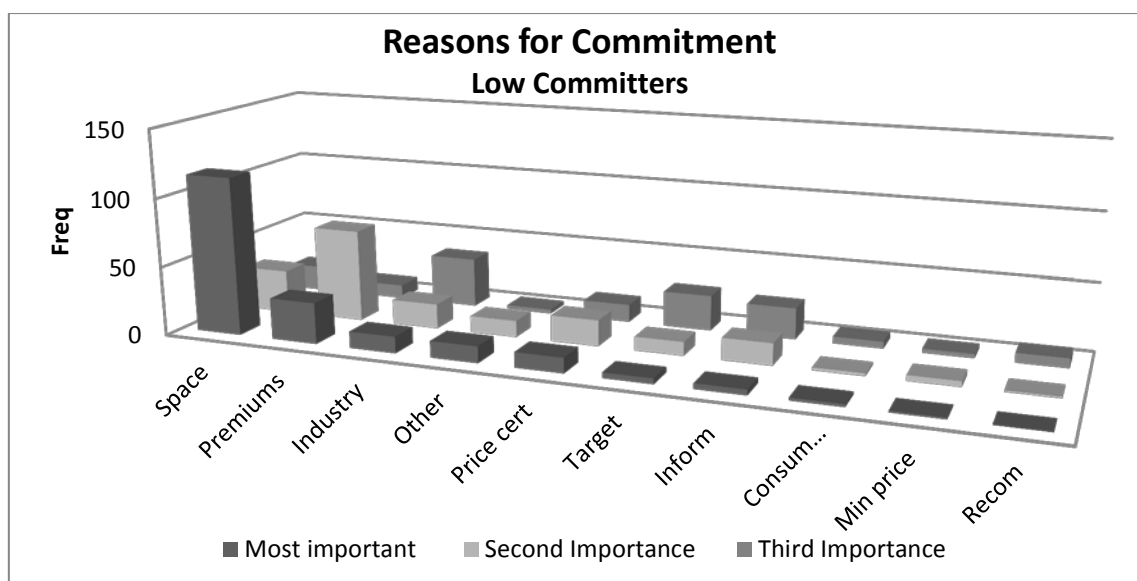
A Pearson's chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are High Committers. The relationship between these variables was significant  $X^2(16, N = 129) = 75, p < .001$ . This means that rankings are not independent to the questions.

For the first ranking, guaranteed processing space contributes most to the Chi-squared test. For the second ranking, 'Other' was the response that contributes most to the Chi-squared test, although this was only because the number of observed responses in the second ranking was fewer than for first and second. For the third ranking, increased information and communication contributes most to the Chi-squared test.

### 5.3 Low Committers

Processing space is overwhelmingly the main reason that Low Committers commit with 112 producers (60%) ranking this the most important reason. Premiums are the second most popular first reason, and the second most important ranking overall, with 67 Low Committers (37%) ranking premiums the second most important reason. For the good of the industry is the third most popular reason overall and the most important third reason with 36 Low Committers (25%) ranking it third. This differs to the scores of all Committers and High Committers.





**Figure 4.22: Reasons for Commitment Low Committers**

A Pearson's chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are Low Committers. Due to low responses for a high number of variables in this group (greater than 20% of expected responses were less than 5); some questions were removed from the analysis for Low Committers. Closer to the consumer, recommended by others, and for a minimum price were removed due to all expected responses for each ranking being less than five. The relationship between these variables was significant  $X^2(12, N = 188) = 195, p < .001$ . This means that rankings are not independent to the questions.

For the first ranking, guaranteed processing space was the response that most contributed to the Chi-squared test. For the second ranking, premiums available was the response that most contributed to the Chi-squared test. For the third ranking, the provision of targets was the response that most contributed to the Chi-squared test.

*"Our company operates a contract system (guaranteed) where you apply for dates and numbers and mostly they are met. We feel it works really well as you know exactly what is required well in advance." Producer, Southland, South Island.*

## 5.4 Sometimes Committers

An analysis of those that Sometimes Commit (SC) was carried out to see the differences in reasons behind committing for those that have attempted to commit, and subsequently stopped committing.

**Table 26: Sometimes Commit pricing specifications**

Pricing specification	Number	Proportion of people that commit
Schedule plus premiums	60	48%
Fixed price per kilogram	45	36%
Minimum price	12	10%
Schedule	9	7%
Fixed price per head	5	4%

**Note:** Percentages do not add to 100% as some producer's ticked more than one option.

There are a higher proportion of producers on fixed price programmes with 50 out of the 126 (40%) that have Sometimes committed compared with 22 per cent of those that always commit. Forty-eight

per cent of those that Sometimes Commit did so with Schedule plus premiums and the remaining small percentage were on a minimum price or plain schedule programme.

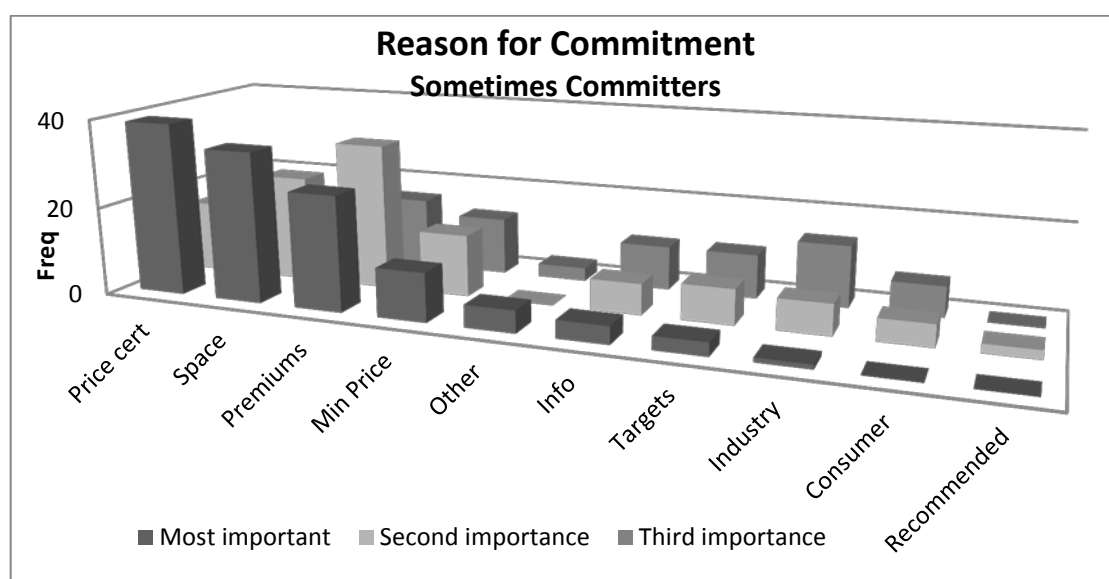
Thirty-seven per cent of those that sometimes commit were under a weight specification programme, slightly less than those that always commit. Twenty seven per cent committed to a monthly delivery, and just fewer than 16 per cent to a weekly delivery, almost identical to those that always commit.

**Table 27: Sometimes Commit delivery specifications**

Requirements	Number	Proportion of people that commit
Meet Weight specification	46	37%
Minimum number delivered	43	35%
Meet monthly delivery of specified number	34	27%
Meet Fat grade specification	24	19%
Meet annual delivery of specified number	22	18%
Meet weekly delivery of specified number	20	16%
Breeding requirement	6	5%
Feeding requirements	3	2%

**Note:** Percentages do not add to 100% as some producer's ticked more than one option.

Price certainty is the most common reason for commitment among Sometimes Committers with 39 (31%) putting this as their number one reason. While guaranteed kill space is still important with 35 (28%) ranking this number one, and second highest ranking overall, premiums available is the most popular overall ranking, due to a large proportion ranking this second most important (28%). This illustrates the greater spread of reasons why Sometimes Committers commit compared to the High and Low Committers.



**Figure 4.23: Reasons for Commitment Sometimes Committers**

A Pearson's chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are Sometimes Committers. Due to low responses for a high number of variables in this group (greater than 20% of expected responses were less than 5), some questions were removed the analysis for Sometimes Committers. Closer to the consumer, recommended by others and 'other' were removed due to all expected responses for each ranking being less than five. The relationship between these variables was significant  $X^2(12, N = 119) = 53, p < .001$ . This means that rankings are not independent to the questions.

For the first ranking, price certainty was the response that most contributed to the Chi-squared test. For the second ranking, price certainty was also the response that most contributed to the Chi-squared test. For the third ranking, for the good of the industry was the response that most contributed to the Chi-squared test.

*“Although we miss the price spike by having a contracted price, we are taking a long-term view, and the industry will be better off” Producer, Otago, South Island*

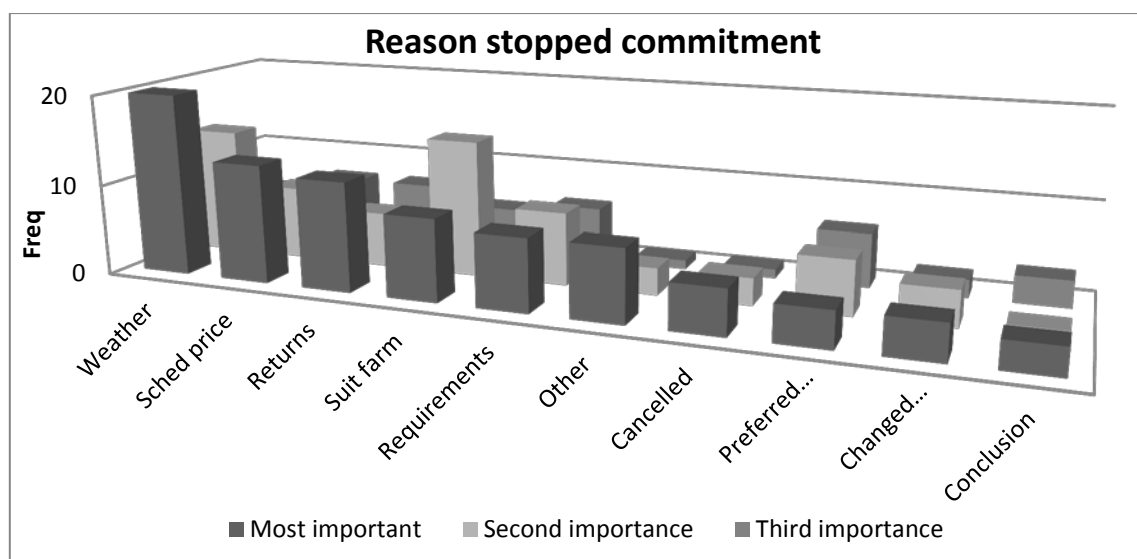
For those that sometimes commit, respondents were also asked the reasons why they have stopped committing. Respondents were asked to rank three variables as their first, second and third reasons for choosing to stop commitment from the following options:

- Inadequate returns for effort required (Returns)
- Drought or other adverse weather event (Weather)
- Didn't suit my farming operation (Suit farm)
- Too difficult to meet requirements (Requirements)
- Divergence between schedule and committed price (Sched price)
- Company cancelled programme (Cancelled)
- Preferred different supply plan (Preferred)
- Natural conclusion at certain time of year (Conclusion)
- Changed company (Changed)
- Other (Other)

The most common reason for stopping commitment was drought or adverse weather event with 20 (23%) out of the 87 that answered this question. Other most important reasons were related to price, specifically a divergence between the schedule and fixed price (15%) or inadequate returns for the effort required (14%). The most common second reason was that the committed programme did not suit the farming operation. This could be closely tied in to reason number one where adverse weather conditions resulted in a producer deciding that committing supply was too difficult and did not suit farming operation.

*“As lamb prices were rising, guaranteed prices were not such an advantage. Difficulties with weather conditions was the major problem.” Producer, Wairarapa, North Island*

A Pearson's chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are Sometimes Committers and have stopped committing. Due to low responses for a high number of variables in this group (greater than 20% of expected responses were less than 5), some questions were removed the analysis. Cancelled by the company and natural conclusion at certain time of year were removed due to all expected responses for each ranking being less than five. The relationship between these variables was non-significant  $X_2(14, N = 79) = 13, p = 0.521$ . This means that rankings are independent from the questions, and there is no one particular reason that contributes more than expected at any ranking to the reasons for stopping commitment.



**Figure 4.24: Reasons stop commitment**

In summary for committers, guaranteed processing space is most important for High and Low Committers, and price certainty is the primary reason Sometimes Committers commit. There is a spread of reasons for committing beyond the most important reason, with differences between the groups in terms of order, but in general price certainty and premiums rank highly. The exception to this is that for the good of the industry has a relatively higher ranking for Low Committers than the other groups. For High Committers, increased information has a significantly higher ranking as third importance compared to other rankings, while provision of targets is significantly higher as a third ranking for Low Committers, and for the good of the industry for Sometimes Committers.

## 5.5 All Non-Committers

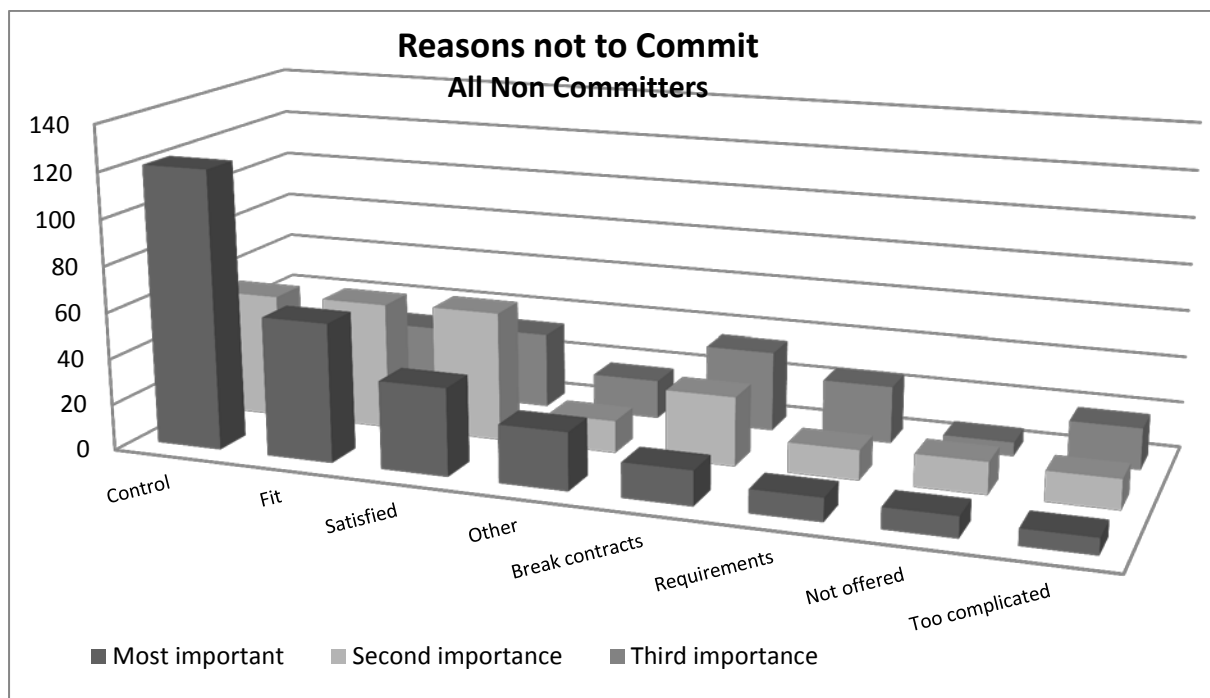
Respondents were asked to rank three variables as their first, second and third reasons for choosing not to commit from the following options:

- Risk of contracts being broken (Break)
- Too complicated (Complicated)
- Requirements too high (Requirements)
- Prefer to have control of selling decisions (Control)
- Not offered by my company (Not offered)
- Doesn't fit my farming operation (Doesn't fit)
- Satisfied with current supply plan (Satisfied)
- Other (Other)

The primary reason producers prefer not to commit is because they prefer to have control of their own selling decisions with 119 ranking this most important (43%) from the 280 that answered this question. This may include deciding which company they sell to, how many lambs to sell, when to sell, and to what weight and fat grade. The second most common primary reason with 57 farmers (20%) ranking first is that committing does not fit with their farming operation. The most common ranking of second importance with 55 farmers (22%) and third highest ranking overall is that producers are satisfied with their current supply plan. Most popular answers in 'Other' category included weather restrictions such as risk of drought or summer dry country (35), and lack of relative reward for committing versus getting price on the day (10).

*“I’d love to sign a contract to know what I would get, but on dry country it’s too tricky to be able to say that the lambs will be that weight on that day” Producer, Otago, South Island*

Both groups in the Non-Commit set are analysed together first for the Chi-Square tests of independence to examine whether there is a significant difference in rankings between questions. Once this has been established then individual groups are analysed to determine what differences there are in rankings between the groups.



**Figure 4.25: Reasons not to commit All Non Committers**

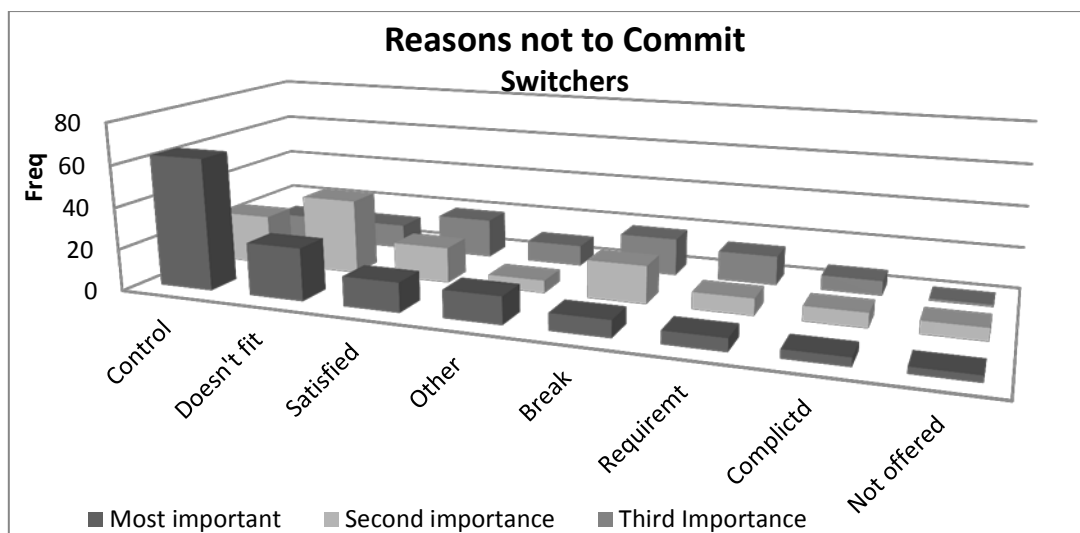
A Pearson’s chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are Non Committers. The relationship between these variables was significant  $X^2(14, N = 280) = 106, p <.001$ . This means that rankings are not independent to the questions. Therefore it is useful to further analyse what the differences in ranking are between groups of Non Committers.

For the first ranking, preferring to have control of selling decisions contributes most to the Chi-squared test. For the second ranking being satisfied with current supply plan contributes most to the Chi-squared test. Preferring to have control of selling decisions contributes most to the Chi-squared test for the third response. However this is only because the number of observed responses for control as a third ranking is lower than would be expected, primarily because the majority of producers ranked this as a first or second ranking.

## 5.6 Switchers

The most important reasons for Switchers are generally in the same order as for all non committers. The main difference is the high rating of not fitting with the current farming system with 36 (30%) of Switchers rating this as the reason of second importance.

*“Mostly I have been able to get prices better than contracts because of a large drop in available lambs and feel that as long as we are still supplying large numbers of lambs we should seek best price on day – we only sell once.” Producer, Hawkes Bay, North Island.*



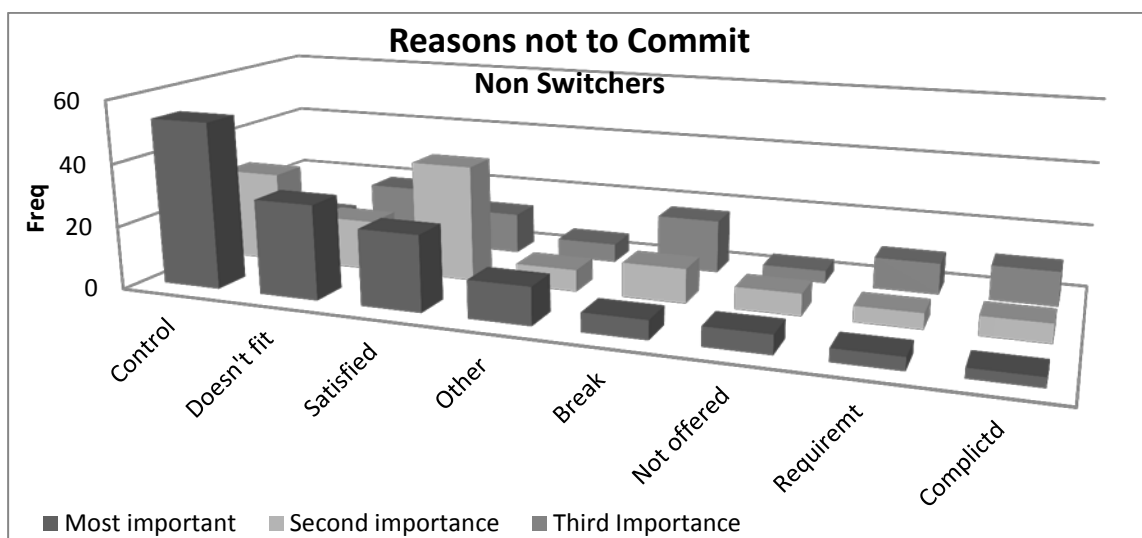
**Figure 4.26: Reasons not to commit Switchers**

A Pearson’s chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are Switchers. The relationship between these variables was significant  $X^2(14, N = 136) = 63, p <.001$ . This means that rankings are not independent to the questions.

Switchers had slightly different ranking to the overall Non Committers for the Chi-square test. For the first ranking preferring to have control of selling decisions was also the response that most contributed to the Chi-squared test. For the second ranking not fitting with farming operation was the response that most contributed to the Chi-squared test. Preferring to have control of selling decisions was the response that most contributed to the Chi-squared test for the third response. However this is only because the number of observed responses for control as a third ranking is lower than would be expected, primarily because the majority of producers ranked this as a first or second ranking.

### 5.7 Non Switchers

Non Switchers had a similar profile for the top three most important reasons for not committing. Non Switchers differed from Switchers with their high rating of being satisfied with current supply plan with 37 (31%) of Non Switchers rating this as their second most important reason.



**Figure 4.27: Reasons not to commit Non Switchers**

A Pearson's chi-square test of independence was performed to examine the relationship between each question and the rankings for producers who are Non Switchers. The relationship between these variables was significant  $X_2(14, N = 138) = 61.37, p < .001$ . This means that rankings are not independent to the questions.

Non switchers had identical rankings to the overall Non Committers. For the first ranking preferring to have control of selling decisions contributes most to the Chi-squared test. For the second ranking being satisfied with current supply plan contributes most to the Chi-squared test. Preferring to have control of selling decisions contributes most to the Chi-squared test for the third ranking. However as for the other two analyses, this is only because the number of observed responses for control as a third ranking is lower than would be expected, primarily because the majority of producers ranked this as a first or second ranking.

*“In this type of country weather will ruin the best laid plans hence I am uncomfortable with contracts” Producer, Otago, South Island*

Preferring to have control of selling decisions is the most common main reason for both groups of Non-Committers. Non-Switchers are more likely to rank satisfaction with current selling plan as their second reason, which correlates with their desire for convenience, and the fact that while they are not commit, they are also not willing to search around for other selling options. For some producers this could largely be due to the fact they have only one option to sell too. Switchers are more likely to rank that committing does not fit with their current operation as their second reason. This is consistent with their marketing strategy of switching companies and the strategic orientation of Trader, which is inherently incompatible with committing. This highlights the fundamental issue of trying to get these producers to commit when the foundation of their marketing strategy is to be able to switch between companies and be flexible.

## 6. Influences of Selling Decisions and Behaviour

*“Many decisions made by farmers regarding livestock sales are made with a very small minded attitude where the best price for me on the day is all that matter. The whole industry will move forward only when we exhibit more trust and maturity in our marketing decisions.” Producer, Tararua, North Island.*

The next section outlines differences in producers' decision making and selling behaviour. This is followed by the most popular overall, and differences between preferences of the five groups for use of information sources, services provided by companies, and reasons for changing meat processing company. These preferences could be useful in attempting to target specific groups for particular marketing programmes. The final section looks at drivers of behavioural changes including price sensitivity, and the role of the buyer and rewards.

### 6.1 Selling behaviour

The proportion of producers that answered the survey is relatively evenly split between the East Coast and Otago-Southland (Table 28). As has been noted before, there are relatively more High and Low Committers in Otago-Southland, particularly Low Committers with 80 per cent of Low Committers in Otago-Southland. There are relatively more Non Committers in the East Coast, particularly Switchers, with 76 per cent of this group located in the East Coast.

**Table 28: Marketing strategy by Region**

Location	HC	LC	SC	NCS	NCDS	Total
East Coast	42%	20%	58%	76%	58%	48%
Otago-South	58%	80%	42%	24%	42%	52%
Total	100%	100%	100%	100%	100%	100%

Table 29 outlines the proportion of producers that consider their main relationship to be with a third party agent, a company, or a company representative. Overall 26 per cent of producer respondents consider an agent to be their main sale relationship, 39 per cent consider it to be with a meat company, and 35 per cent with a meat company representative. Relationships where this proportionality differs significantly include High Committers of whom almost 60 per cent consider their main relationship with a meat company. Low Committers have a higher proportion of relationships with the company or the representative. Sometimes Committers have a lower proportion of relationships with the companies, and a higher proportion with individual agents or representatives. Switchers have a higher proportion of relationships with agents, and fewer relationships with meat companies. Non Switchers have a similar proportion of producers in relationships with the different parties as the overall group.

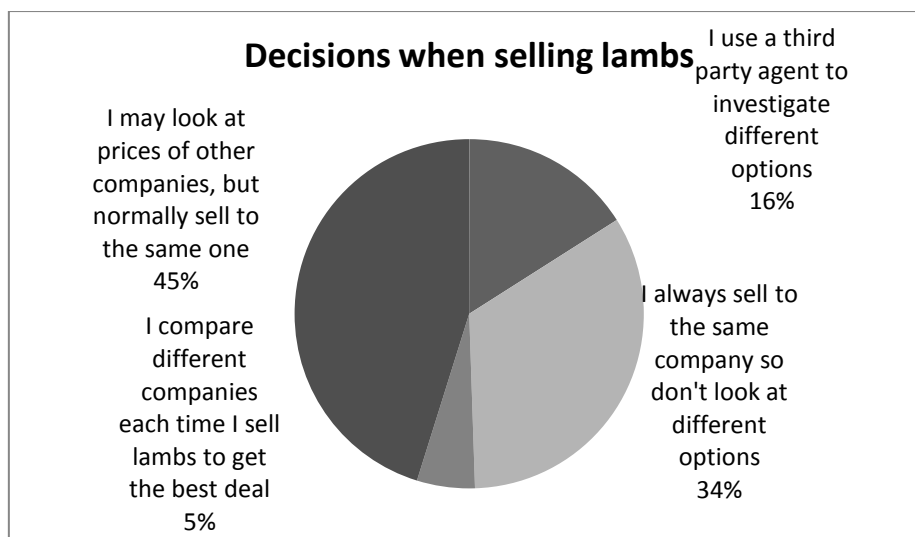
Overall there is a high level of perceived relationship quality with the average score of 8.2 out of 10 with 10 representing high quality. There is no large variation in scores between relationship types or marketing strategy types, and this is reflected in the fact that the relationship score did not enter in to any of the models that differentiated producers. All relationships types are ranked high with the relationship with the company lowest at 7.8, then with the agent at 8.3 and the highest score with the company representative at 8.4. The Low Committers score all of their relationship types the highest from the marketing strategy groups and this reflects the convenience that Low Committers value from having someone else make the selling arrangements for them. Low Committers were found to have more trusting relationships than High Committers in some cases as shown in **Error! Reference source not found.**

**Table 29: Main relationships and Score**

Frequency	HC	LC	SC	NCS	NCDS	Total
Agent	15 (14%)	13 (9%)	38 (34%)	69 (53%)	35 (27%)	170 (26%)
Company	75 (59%)	94 (50%)	33 (26%)	20 (16%)	53 (39%)	275 (39%)
Representative	34 (27%)	77 (41%)	50 (40%)	40 (31%)	46 (35%)	247 (35%)
Total	124 (100%)	184 (100%)	121 (100%)	129 (100%)	134 (100%)	692 (100%)
Average score						
	HC	LC	SC	NCS	NCDS	Total
Agent	8.0	8.8	7.9	8.4	8.6	8.3
Company	7.9	8.1	7.5	7.1	7.8	7.8
Representative	8.4	8.5	8.4	8.4	8.4	8.4
Average	8.1	8.3	8.0	8.2	8.2	8.2

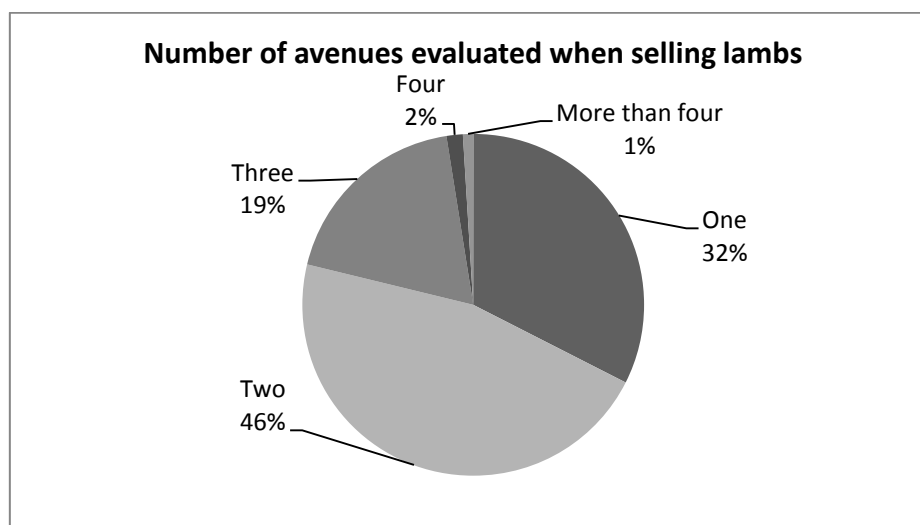
Just over one third of producers do not compare other companies when selling lambs as they always sell to the same company (Figure 4.28). Forty five per cent will look at the prices of other companies but normally sell to the same one. Some producers commented that they will keep an eye on prices from other companies to make sure their preferred company is paying them a fair price. Sixteen per cent of farmers use a third party to compare the different prices, while five per cent will compare price themselves.





**Figure 4.28: Decisions when selling lambs**

Respondents were asked to state how many selling options they evaluated each time they sold lambs (Figure 4.29). One-third of sample respondents only consider one avenue when selling lambs. This aligns with the similar proportion who indicated they always sold to the same buyer. Similarly 46 per cent look at two options, which align with the proportion who indicated they may look at other options but normally sell to the same one. A small minority (3%) will evaluate four or more options. This also aligns with the small minority (5%) that compare prices each time to get the best price.



**Figure 4.29: Number of avenues**

## 6.2 Influences of selling decisions

*“Being in a cooperative, bargaining power is irrelevant; I’m in this for the survival of the New Zealand meat industry owned by farmer cooperatives.” Producer, Southland, South Island.*

Respondents were asked to rate which information sources they used least often to most often from the following.

- Company livestock representative
- Third party stock agent
- Professional services

- Family members
- Other farmers
- Meat company newsletters
- Farming magazines
- Other

Company livestock representatives are the most frequently used source of information, followed closely by third party stock agents. Meat company newsletters, farming magazines and other farmers are sometimes used. Family members, professional services, and 'other' are least often used when making decisions about selling lambs. Common responses in the 'other' category include long range weather forecasts, farmer discussion groups, the specifications of contracts and commitments, as well as the supply, demand and prices at sale yard and store markets.

*"I keep monitoring two or three companies that operate in our area and let them know I am checking competitors and this usually assures a good price."* Producer, Wairoa, North Island

This analysis shows that in general farmers use a combination of information sources primarily through a one-on-one personal relationship with a buyer, and then secondarily through other sources of information which are mostly data based. Producers commented that while the personal relationship is important in decision making, many farmers like to back up discussions with facts.

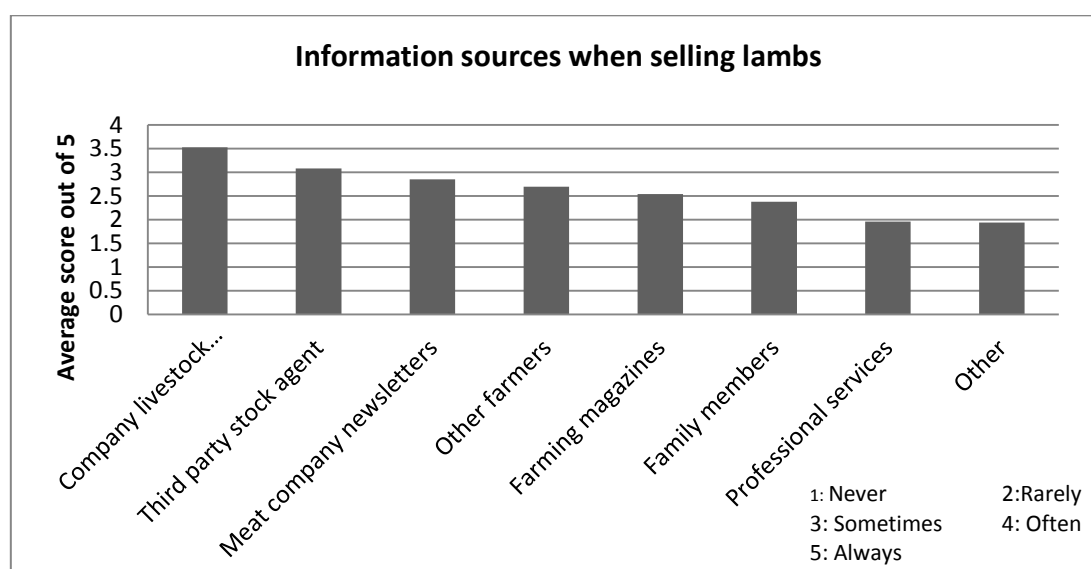


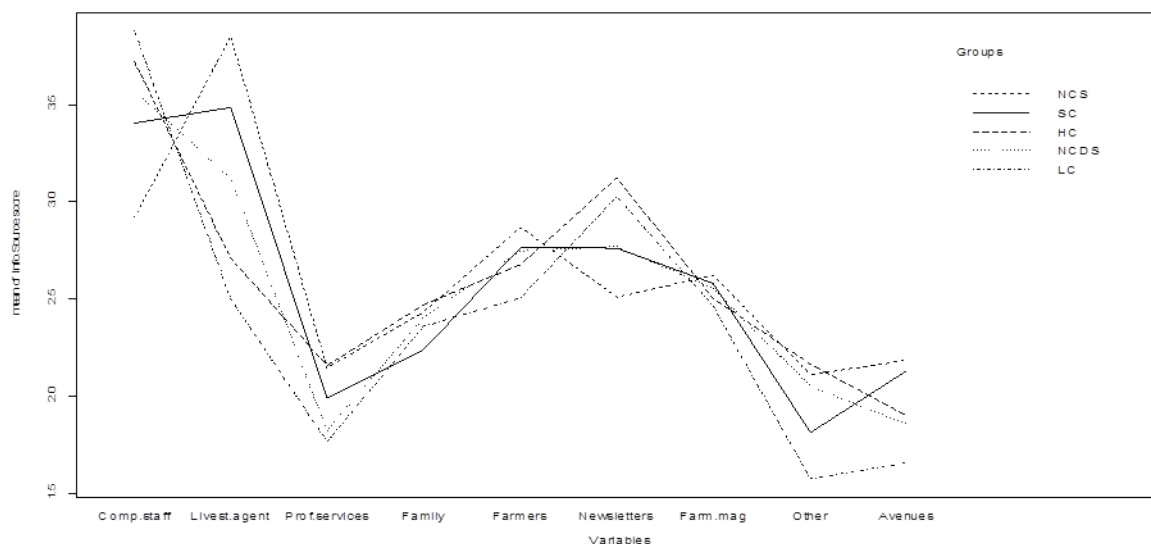
Figure 4.30: Information sources

Table 30: Scores for frequency of using information sources

Source	Never	Rarely	Sometimes	Often	Always	Total	N
Company livestock representative	10%	10%	20%	36%	23%	100%	711
Third party stock agent	17%	18%	22%	24%	18%	100%	701
Meat company newsletters	16%	21%	33%	22%	8%	100%	686
Family members	31%	24%	25%	14%	5%	100%	677
Farming magazines	21%	28%	32%	16%	4%	100%	685
Professional services	50%	21%	15%	10%	4%	100%	689
Other	59%	15%	10%	8%	9%	100%	172
Other farmers	14%	23%	42%	18%	2%	100%	687

Interaction plots were created to compare the behaviour of the different marketing strategies in terms of the extent information is used, and differences in the types of information used by each strategy. Figure 4.31 illustrates the mean scores for each strategy for each variable. More advisory based sources are on the left hand side, through to media based sources on the right, and then the number of avenues at the far right. The area of most notable difference between producers is whether they use a third party agent or a meat company representative. High Committers (HC) and Low Committers (LC) use the company representative most often, while Switchers (NCS), Non-Switchers (NCDS) (both Non-Committers) and Sometimes Committers (SC) most often use third party agents for their selling information. Committers (HC & LC) are more likely to consult company newsletters. High Committers and Switchers are the two most likely to use a professional service which aligns with their active selling strategy, although this is still a secondary information source. As would be expected, Switchers and Sometimes Committers evaluate the most alternative selling options on average. Table 31 shows the overall mean and standard deviation for each variable.

*“A defining point of farmers is their ability to makes a decision and stick to it – considering more than just the back pocket, weather, and the whole farm system” Meat company livestock representative*



**Figure 4.31: Information sources by Marketing Strategy**

**Table 31: Information sources average score by Marketing Strategy**

	Company Staff	Livestock Agent	Profess Services	Family member	Farmers	Newsletters	Farming Magazine	Other	Number Avenues
<b>Mean score</b>	3.5	3.1	2.0	2.4	2.7	2.9	2.5	1.9	1.9
<b>Std. Dev</b>	1.2	1.4	1.2	1.2	1.0	1.2	1.1	1.4	0.8

### 6.2.1 Services

Respondents were asked to rate services they found desirable for a company to offer from the following.

- Latest technology to provide feedback to producers (Technology)
- Stock drafter to pick which stock should be sold (Drafter)

- Producer groups linked to supermarket (Prod. Group)
- Market information (Market info)
- Sale and purchase of store stock (Store)
- Certainty of processing space (Proc. Space)
- Finance plans (Finance)

Guaranteed processing space is considered the most critical service a company should provide. This aligns with processing space being the main reason producers commit their supply. A drafter that can pick how a producer should sell their lambs to get best return is also considered very important. There are a proportion of producers that do not see this as important. This could either be because they do not see drafting lambs to get the best price as important, or because they prefer to do it themselves, and do not think it is necessary to have a third party do it. Market information and technology for feedback on performance is considered quite important by most producers. Store stock policy, producer groups and finance plans are considered relatively less important. These three services are considered very important for the particular producers that need them, and unnecessary for those that do not.

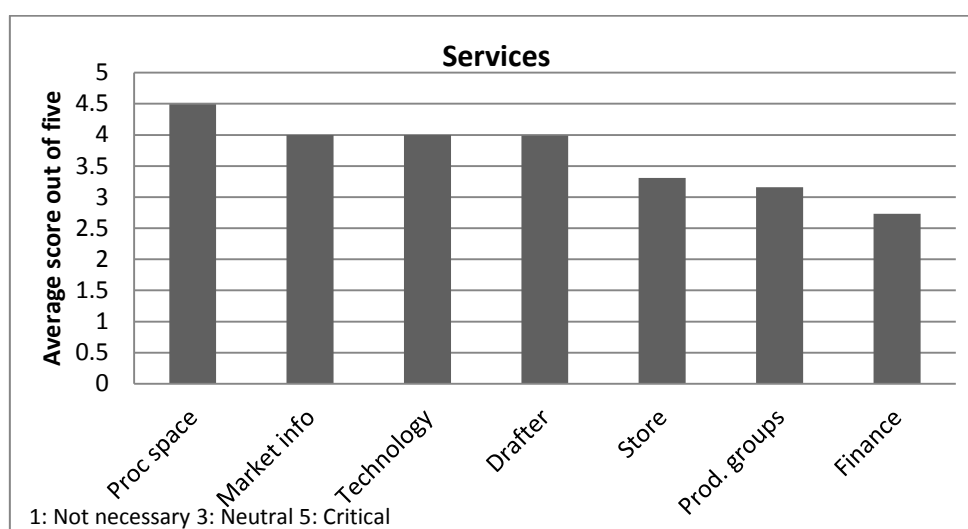


Figure 4.32: Services

Table 32: Level of necessity of services

Services	Not necessary	...	Neutral	...	Critical	Total	N
Space	1%	1%	6%	33%	60%	100%	423
Drafter	9%	3%	14%	26%	48%	100%	338
Market info	3%	2%	17%	47%	30%	100%	213
Technology	2%	2%	17%	52%	27%	100%	188
Store	16%	5%	27%	35%	16%	100%	115
Prod. Groups	10%	11%	40%	29%	9%	100%	66
Finance	25%	9%	42%	18%	7%	100%	46

While different marketing strategies generally follow the same trend for their desire for most of the services provided by companies, the greatest differences in desires are for a stock drafter and the sale and purchase of store stock. High Committers have the highest desire for technology, producer groups, market information, and the lowest desire for a proficient stock drafter. This is mostly likely as they prefer to use all of the other services to then make their own drafting decisions. Non Switchers rate all services quite low apart from the stock drafter. This correlates with their high

Convenience score, and illustrates that these producers do not like to play a large role in the selling process. Switchers consider the sale and purchase of store stock of low importance and may reflect a low connection to the company, the use of agent for these services, or the lack of need for this service.

Low Committers have high scores for processing space and sale and purchase of store stock, which correlates with their main reason for committing. The importance of store stock services may suggest that these producers farm in areas where climatic conditions can have a severe impact such that processing space and a market for store stock are very important. Those that Sometimes Commit generally have medium scores, apart from having the lowest average score for processing space. This correlates with their ranking for reasons for committing, and confirms that for these producers processing space is not a large issue, and there are other reasons that lead them to commit.

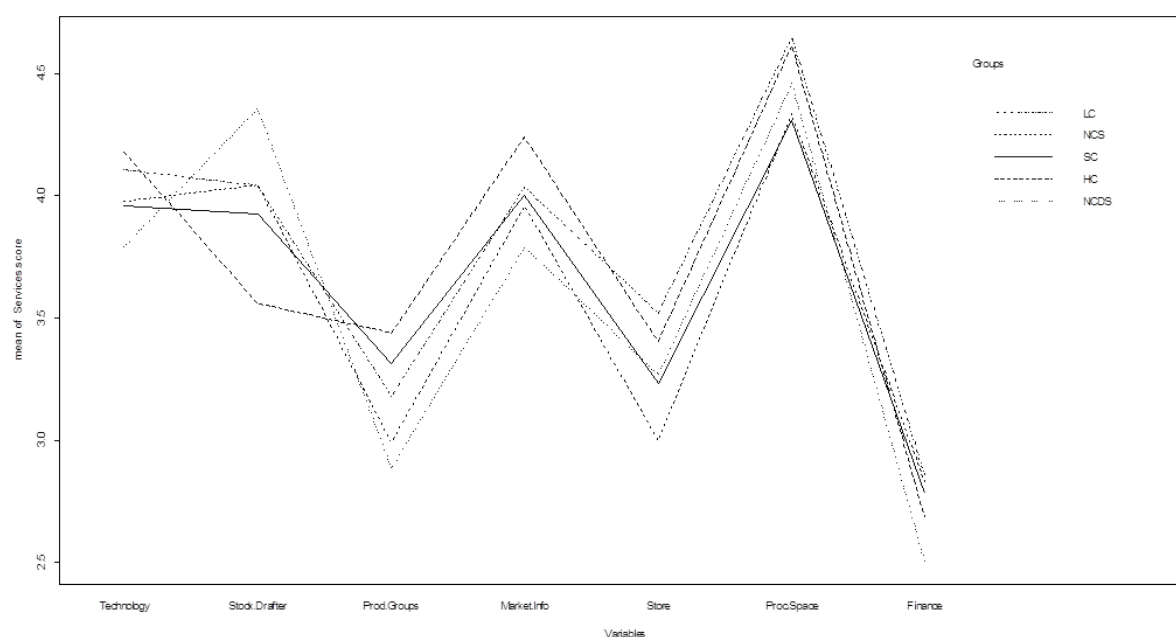


Figure 4.33: Service by Marketing Strategy

Table 33: Services average score by Marketing Strategy

	Tech	Drafter	Prod Group	Info	Store	Proc Space	Finance
<b>Mean score</b>	4.0	4.0	3.2	4.0	3.3	4.5	2.7
<b>Std. Dev</b>	0.8	1.3	1.1	0.9	1.3	0.7	1.2

## 6.2.2 Changes to processing company

*“It’s important to like the company, their vision and focus, good information sharing, and similar set of values (positioning, and marketing at the high end), good feedback, and innovative company that empowers farmers.” Producer, Northland, North Island*

Respondents were asked to rate which reasons have had the largest contribution to a change of company in the past:

- Financial soundness of the company (Financial)

- Fair treatment of suppliers (Fair)
- Transparency of operations (Transparency)
- Level of innovative activities (Innovation)
- Staff capability (Staff)
- In-market behaviour (In-market)
- Level of partnership with suppliers (Partnership)
- Vision for future and leadership in the industry (Vision)

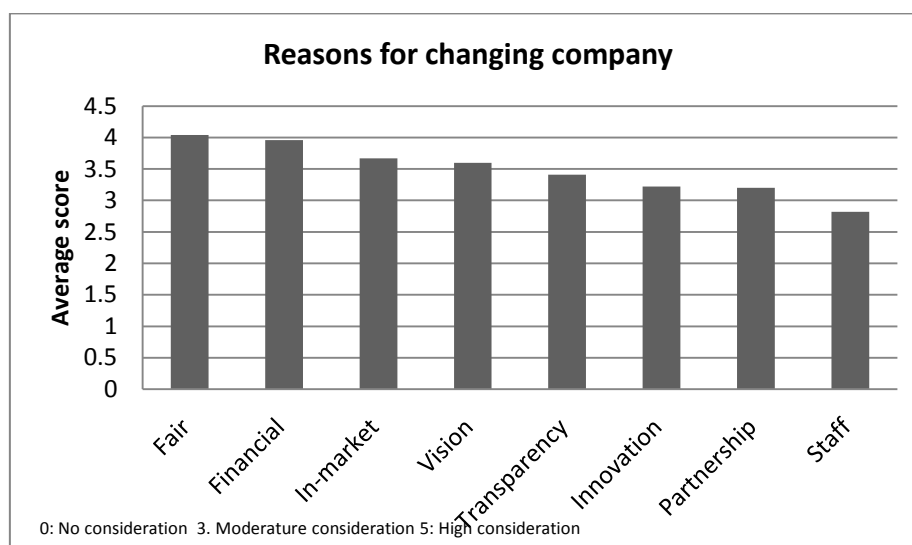
Figure 4.34 illustrates reasons producers gave different levels of consideration to if changing their main processing company. On average, there are quite high ranking of all variables with staff capability the only variable given less than moderate consideration. On reflection, this question should have been rephrased to additionally capture reasons why producers stay with a company and have not changed. Some producers may have put low consideration for all options because they have not changed companies, yet there may be one specific reasons why they stay with the company they are with.

*“I think all companies are trying to do a good thing in the market” Producer, Waikato, North Island*

Fair treatment of supplier was the most common reason given of high consideration for changing companies. Almost half of producers that answered fair treatment of suppliers gave it high consideration. Financial soundness, was the next highest ranked, followed by in-market behaviour, visions and leadership and transparency of information.

*“Performance earns loyalty not promises.” Producer, Otago, South Island*

The ranking of reasons indicates that producers who have changed consider there to be a difference between companies in one or more of the reasons. However we are unable to tell from the question whether they changed because they were unhappy with the situation at their previous company i.e. seen as treating suppliers unequally; or because they see that the new company would provide a better situation i.e. above average fair treatment of suppliers. Moreover it could be assumed that in general producers do not perceive great differences between companies in reasons ranked lower in consideration such as staff capability.



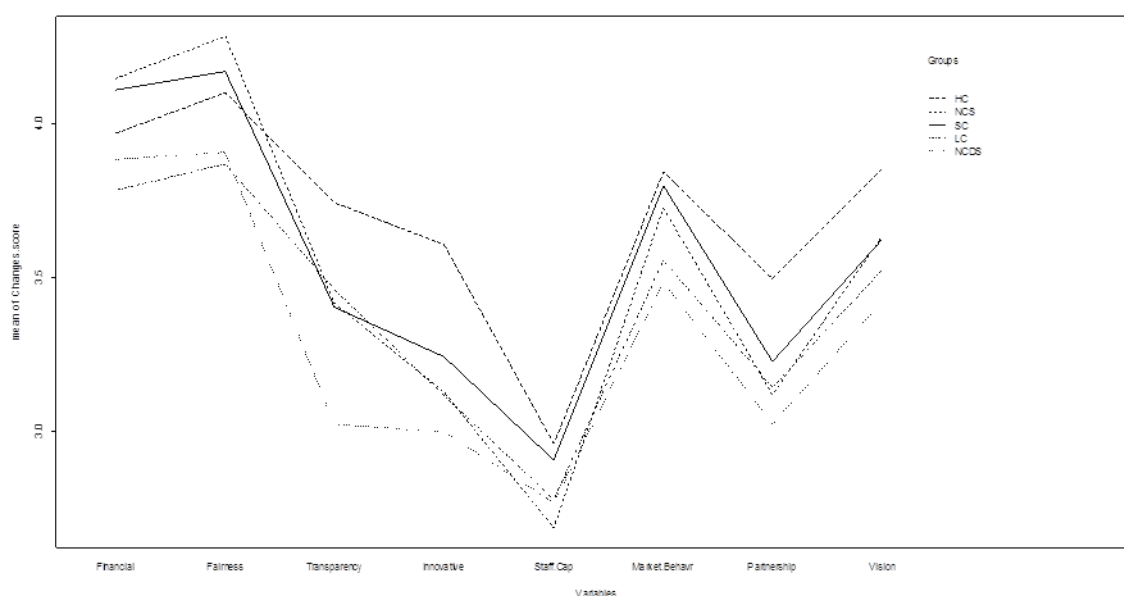
**Figure 4.34: Reasons for changing company**

**Table 34: Level of consideration of different factors when changing companies**

	No consideration...		Moderate	...	High consideration	Total	N
<b>Fair</b>	9%	3%	9%	31%	48%	100%	698
<b>Financial</b>	10%	3%	14%	27%	46%	100%	702
<b>In-market</b>	11%	5%	20%	33%	30%	100%	692
<b>Vision</b>	13%	5%	22%	31%	30%	100%	692
<b>Transparency</b>	15%	8%	25%	27%	26%	100%	693
<b>Innovation</b>	18%	8%	27%	27%	19%	100%	691
<b>Partnership</b>	29%	11%	26%	17%	16%	100%	692
<b>Staff</b>	16%	8%	31%	30%	16%	100%	690

While all marketing strategies ranked changes at similar levels in general, there were some differences between responses for the variables (Figure 4.35). High Committers gave vision, partnership, innovation and fairness the highest average consideration. Low Committers and Non Switchers generally gave low consideration to all variables. Interestingly Switchers gave the highest consideration to fair treatment of suppliers. These producers may prefer companies that do not differentiate producers in terms of prices and premiums between producers that do and do not commit.

*“I have dealt with one small and very forward thinking meat processor for 20 years plus. The attributes of that company far exceeds (in my mind) those of the larger companies, who despite their talk, never seem to get around to carrying out their objectives with any success”*  
*Producer, Hawkes Bay, North Island*

**Figure 4.35: Changes to Processing Company by Marketing Strategy****Table 35: Changes to processing company average score by Marketing Strategy**

	Financial	Fairness	Transparency	Innovation	Staff	Behaviour	Partnership	Vision
<b>Mean</b>	4.0	4.0	3.4	3.2	2.8	3.7	3.2	3.6
<b>Std. Dev</b>	1.3	1.2	1.3	1.3	1.4	1.3	1.3	1.3

### 6.3 Influences of selling behaviour

The next section looks at areas where producers may be enticed to change their behaviour, either a change to commit, or a change of meat processing company. Areas examined include the price incentive required to commit, switch companies, or break a commitment, whether producers respond to rewards and the relationship with the agent or livestock representative.

#### 6.3.1 Incentive to commit

Producers were asked to specify how likely they would be to commit lambs from definitely not to definitely at different price points. Figure 4.36 illustrates the extent of the movement towards willingness to commit as the price incentive increases. Some farmers refuse to commit at any price level, while others would commit for no financial reward. The majority followed a path across from less likely to commit to more likely to commit as the price incentive increased.

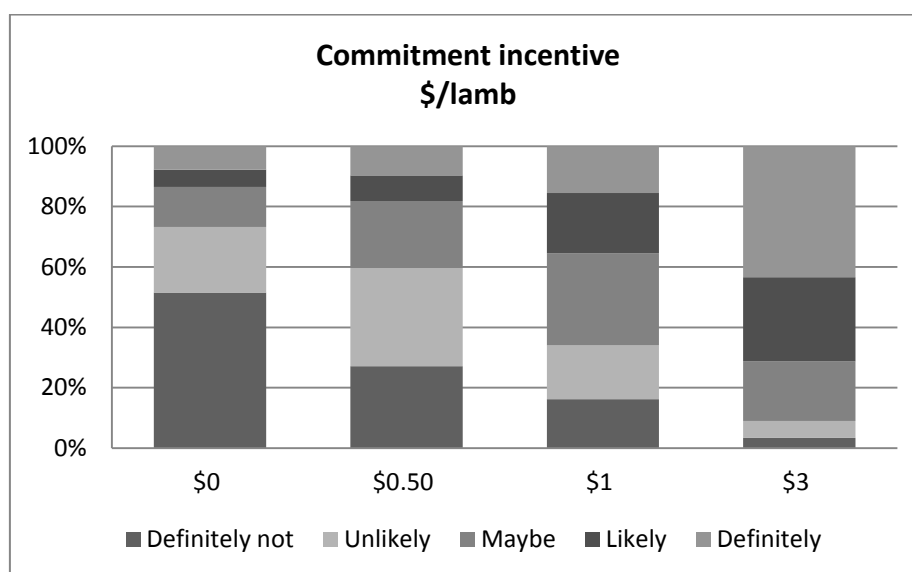


Figure 4.36: Commitment incentive

Table 36: Commitment incentive for annual supply

Incentive	Definitely not	Unlikely	Maybe	Likely	Definitely	Total	N
\$0.00	52%	22%	13%	6%	8%	100%	642
\$0.50	27%	33%	22%	8%	10%	100%	638
\$1.00	16%	18%	31%	20%	16%	100%	649
\$3.00	3%	6%	20%	28%	43%	100%	691

While all marketing strategies followed a general trend of increasing their likelihood of committing at increasing price points, there were some differences in the level of commitment at each price point. There is generally a higher standard deviation at lower price points than at higher points, indicating that there is less consensus on commitment at lower price points. Low committers are the group most likely to commit for \$0, and illustrates how valuable they consider the aspect of guaranteed processing space. It is not until the \$1.00 price point that High Committers become as likely to commit as Low Committers. Switchers and Sometimes Committers are the least likely to commit at each price point, however they cross over into the more than likely rather than less likely threshold at the \$3.00 point, which illustrates that at this point, the premium for committing may begin to outweigh the variables that prevent these marketing strategies from committing. At \$1.00, both



Committer marketing strategies are more likely to commit than not (>3.0), Non Switchers are as likely to as not (~3.0), and Sometimes committers, and Switchers are less than likely to commit.

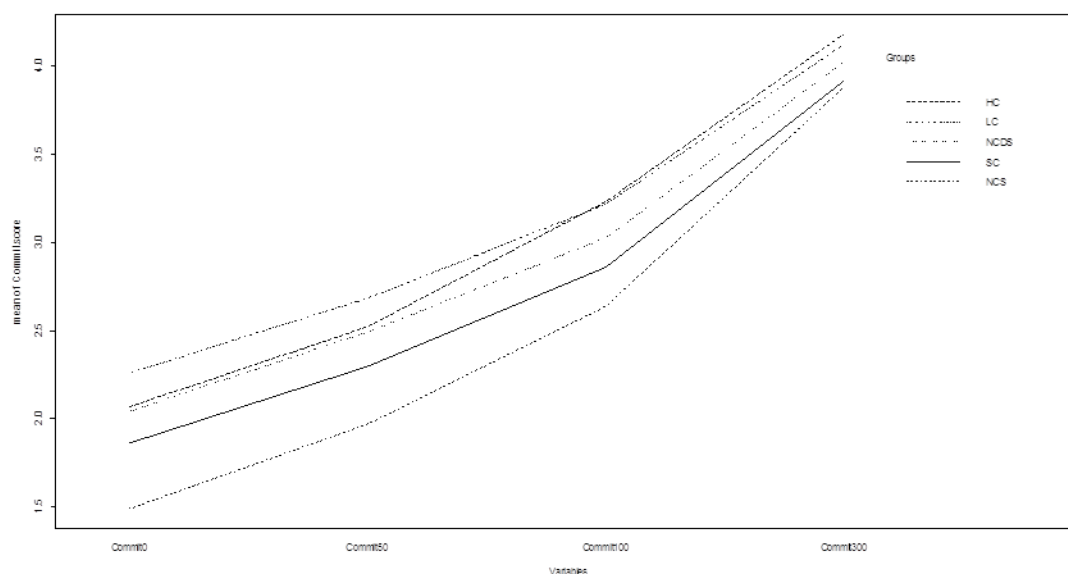


Figure 4.37: Price sensitivity to commit by Marketing Strategy

Table 37: Price sensitivity to commit average scores by Marketing Strategy

	\$0	50c	\$1	\$3
<i>Mean</i>	2.0	2.4	3.0	4.0
<i>Std. Dev</i>	1.3	1.2	1.3	1.1

### 6.3.2 Incentive to switch companies

Figure 4.38 and Table 38 illustrate all respondent producers' price sensitivity and what price incentive it would take to switch from one company to another for a one-off sale. Some producers are very price sensitive and will easily switch between companies based on an extra 10c/kg, whereas others need a higher price margin to compensate for what they may perceive to lose from switching. If producers switch they may face repercussions such as losing preferential processing space, or damaging existing relationships with a company or agent. This was reinforced by producers commenting that they would only switch if they could see that there was a sustainable long term price difference. Others thought that if another company was offering a higher price, it would be causing problems elsewhere along the chain, such as only offering much higher prices to procure stock in the short term and not for the long-term good of the industry. Some producers also commented that if there was a certain difference in price offered they would go back to their company of first choice and either ask them to match it or explain why the difference existed.

*"I assume that the highest price comes from a sound well-organised company." Producer, North Island.*

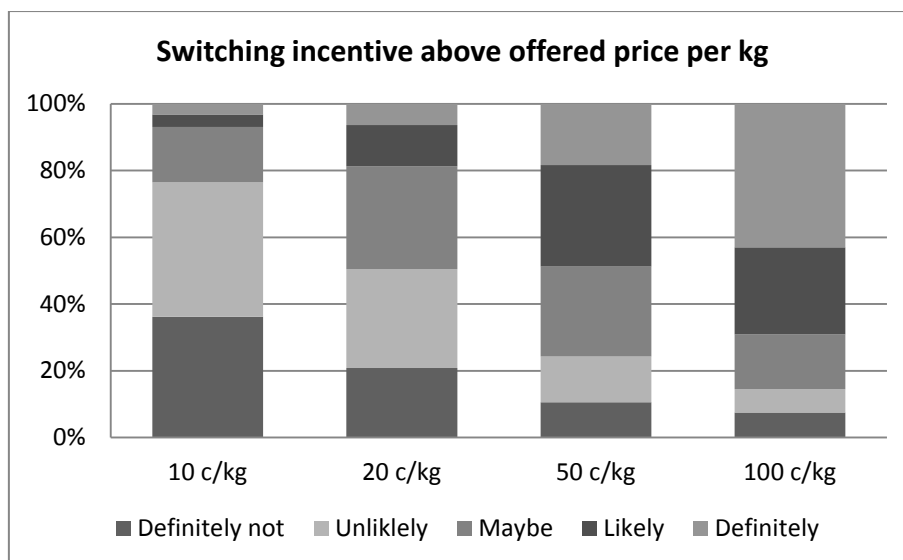


Figure 4.38: Switching incentive

Table 38: Switching incentive for one-off lamb sale

Incentive	Definitely not	Unlikely	Maybe	Likely	Definitely	Total	N
10 c/kg	36%	40%	17%	4%	3%	100%	663
20 c/kg	21%	30%	31%	12%	6%	100%	662
50 c/kg	11%	14%	27%	30%	18%	100%	671
100 c/kg	7%	7%	16%	26%	43%	100%	695

The different marketing strategies generally follow a different trend with regards to incentives to switch companies from the incentive to commit (Figure 4.39). There is a higher standard deviation at higher price points indicating that there is less consensus among producers about whether to switch or not as the incentive increases. Switchers are generally the most likely to switch at each price point, although the Sometimes Committers will switch with the same likelihood on average for 50c and \$1.00 price point. High Committers and Non Switchers will switch at similar rates for each price point. High Committers are more likely to switch than Low committers at each price point, which reinforces the Low Committers aversion to leaving the company they have committed to due to the possible repercussions of losing guaranteed processing space. Of interest is that the majority of producers change from being less than likely (<3.0) to more than likely (>3.0) at the \$0.50 price point.

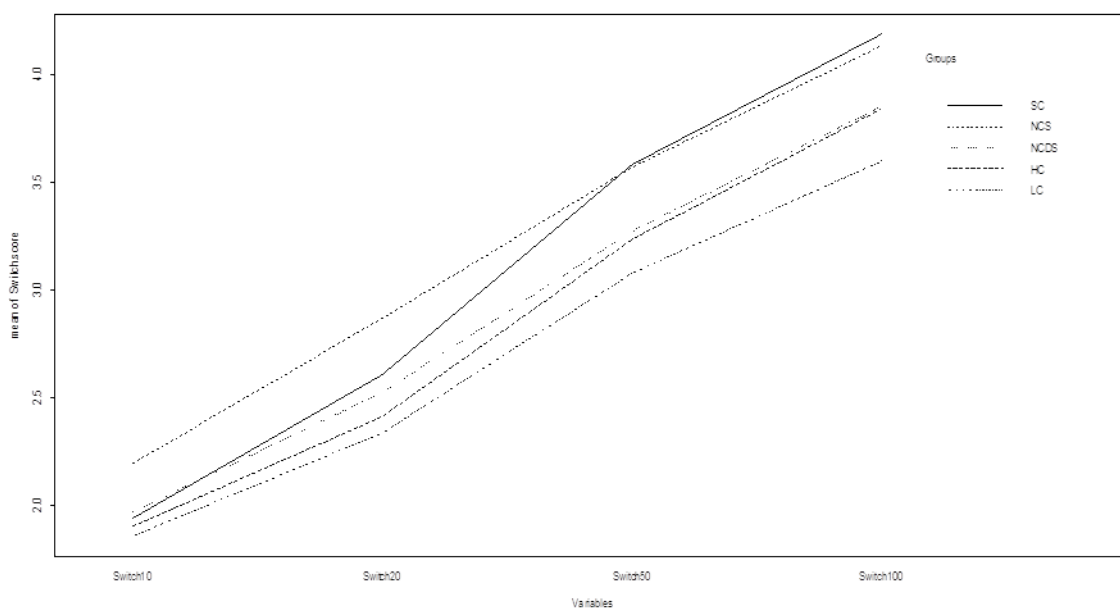


Figure 4.39: Price sensitivity to switch by Marketing Strategies

Table 39: Price sensitivity to switch average score by marketing Strategy

	10c	20c	50c	\$1
<b>Mean</b>	2.0	2.5	3.3	3.9
<b>Std. Dev</b>	1.0	1.1	1.2	1.2

### 6.3.3 Incentive to break commitment

Figure 4.40 and Table 40 illustrates all respondent producers’ price sensitivity to switch if they had committed to one company. Overall producers are less likely to switch if they had committed than if they had not. Almost forty per cent of producers would definitely not switch for \$1/kg extra if a commitment had been made, compared with seven per cent if no commitment had been made. At the other extreme 16 per cent of producers definitely would break a commitment for \$1/kg.

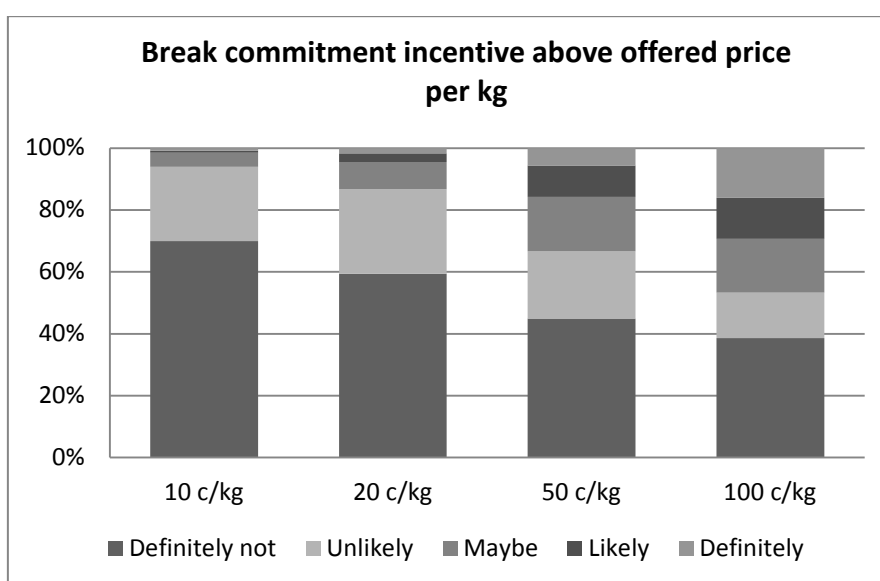


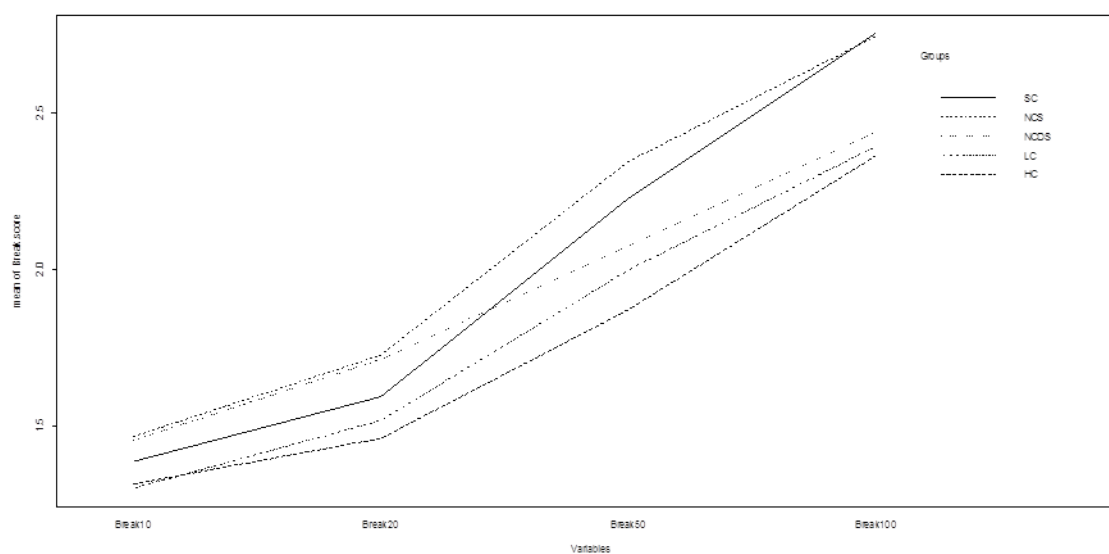
Figure 4.40: Break commitment incentive

**Table 40: Break commitment incentive**

Incentive	Definitely not	Unlikely	Maybe	Likely	Definitely	Total	N
10 c/kg	70%	24%	5%	1%	1%	100%	676
20 c/kg	59%	27%	9%	3%	2%	100%	688
50 c/kg	45%	22%	18%	10%	6%	100%	674
100 c/kg	39%	15%	17%	13%	16%	100%	692

The different marketing strategies generally follow a similar trend in responding to the incentive to break commitment (Figure 4.41). However there is a much higher standard deviation for this chart at higher price points, indicating a divergence in responses as the incentive increases (Table 41). In Figure 4.41 it must be noted that the range of responses on the left hand side does not extend to an average score of 3.0 (which represents maybe switch). This reinforces that producers are on average less than likely to break a commitment for any of the price points mentioned.

The most likely marketing strategy to break a commitment is the Switchers. Sometimes Committers increase the likelihood of breaking commitment at a greater the Non Switchers. High Committers are the least likely to break commitment, and at \$0.50/kg are on average very unlikely to break a commitment. This price could represent around \$8.50 for a 17kg lamb carcase, and may reflect a combination of premiums producers receive for commitment, as well as the intrinsic value that producers perceive from committing either through processing space, relationships, or other industry good factors.

**Figure 4.41: Price sensitivity to break commitment by Marketing Strategy****Table 41: Price sensitivity to break commitment average score by Marketing Strategy**

	10c	20c	50c	\$1
<b>Mean</b>	1.4	1.6	2.1	2.5
<b>Std. Dev</b>	0.7	0.9	1.2	1.5

### 6.3.4 Influence of rewards

The majority of producers strongly agree (66%) or agree (23%) that attempting to reach higher paying weight and grade ranges makes a difference to their returns (Figure 4.42). This aligns with the proportion of producers who strongly agree or agree (70%) that they consistently target premiums by producing to the higher paying weights and grades (Figure 4.43). These two charts illustrate how behaviour can be influenced by perceptions and incentives. It is most likely that the producers that perceive no difference from trying to meet certain grades will make no effort to meet them.

Figure 4.46 illustrates again the high agreement by all marketing strategies that aiming for certain weight and fat grades does make a difference to their returns. This strong belief may assist further development of incentive programmes that specify target weight and fat ranges as required by the markets.

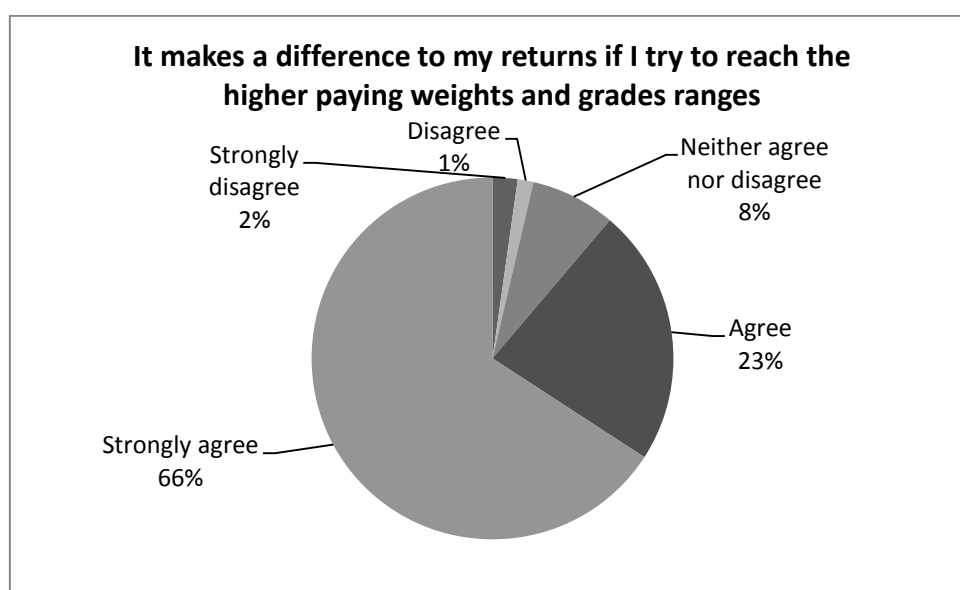


Figure 4.42: Rewards

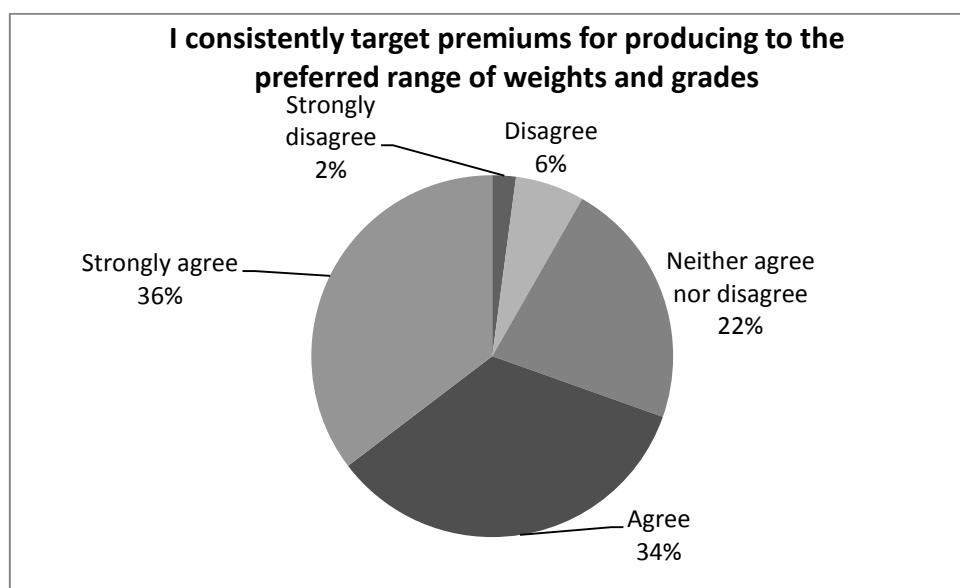
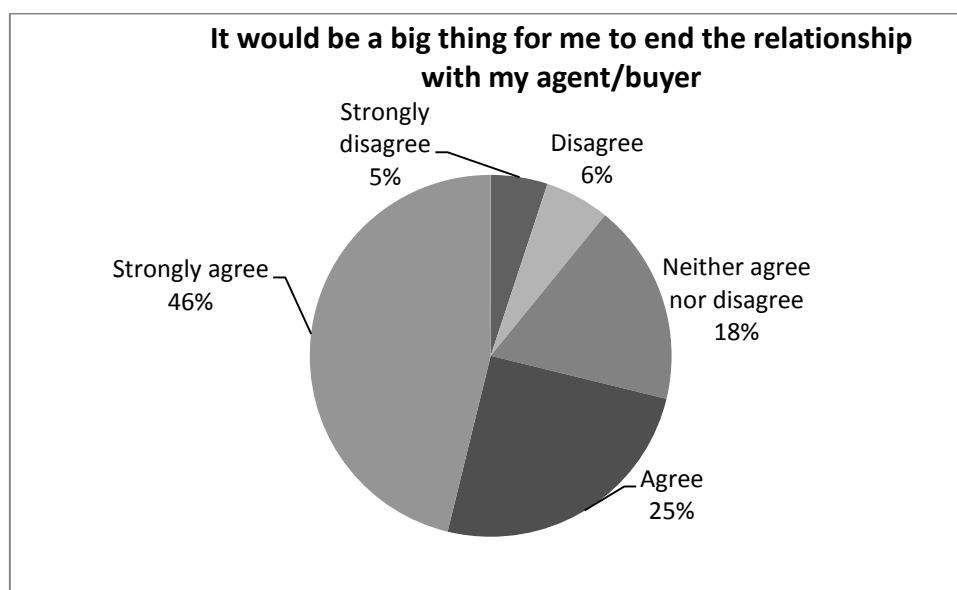


Figure 4.43: Target premiums

### 6.3.5 Influence of buying agent

*"I love my agent." Producer, Gisborne, North Island*

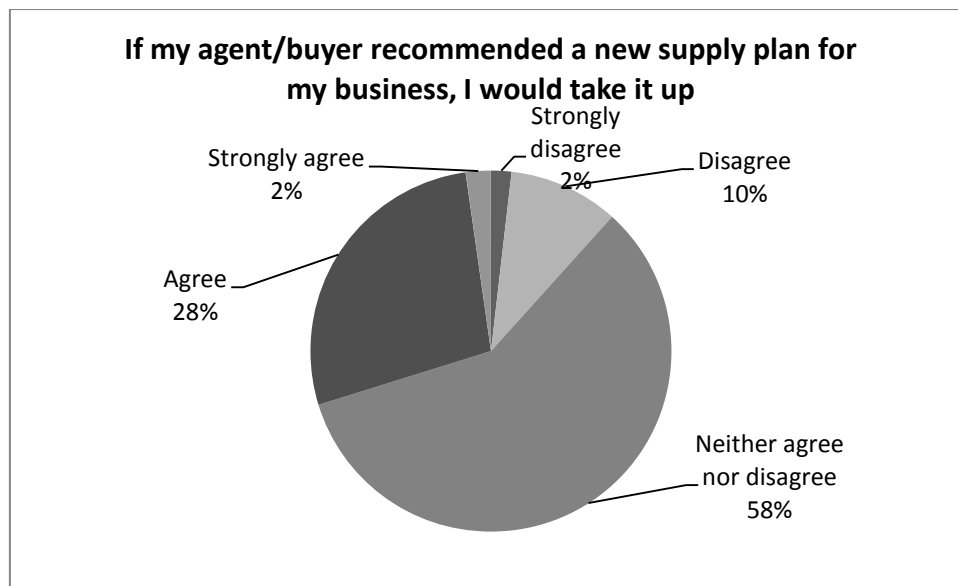
Figure 4.44 illustrates the strength of the connection between many producers and their agents. This could be with either an independent agent or the meat company's livestock representative. The strength of the relationship will have an impact on the behaviour of the producer. If it would be a big thing for a producer to end the relationship with their agent, this could restrict producers switching agent or switching to a different type of supply plan. If the producer perceived high repercussions from ending a relationship, the value proposition of the change would need to be high as well. Nevertheless the strength of the relationship could also positively influence the level of uptake of new supply plans. In contrast, for those who have no strong connection to an agent, they can more easily switch between companies and supply plans.



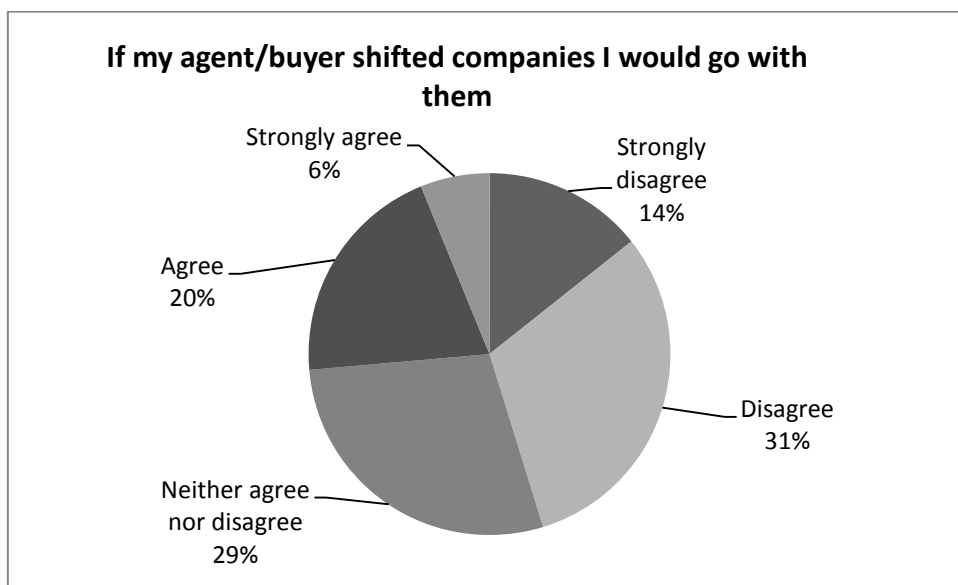
**Figure 4.44: End relationship**

Thirty per cent of sample respondents indicated that if their agent recommended a new supply plan, they would take it up (Figure 4.45). This is without knowing any particular specifications of the supply plan, but going totally on the recommendation of the agent, thus reinforcing the strength of the relationship between producer and agent. Almost 60 per cent neither agreed nor disagreed which probably more reflects the desire for further information.

There are a group of agent loyalists (26%) who would shift companies if their agent shifted (Figure 4.46). Further cross-sectional analysis found that producers that primarily sell through a third-party agent are more likely to shift companies with an agent. Those that always sell to the same company were least likely to switch companies if their agent did, however they also rated ending the relationship as having the highest effect. Thus, while this group values very highly the relationship with their meat company representative (although not a statistically significant difference from others,  $p = .663$ ), they are even more loyal to their meat company ( $p < .001$ ). Interestingly producers that sell through a third party are more likely to take up a new supply plan recommended by their agent ( $p < .001$ ).

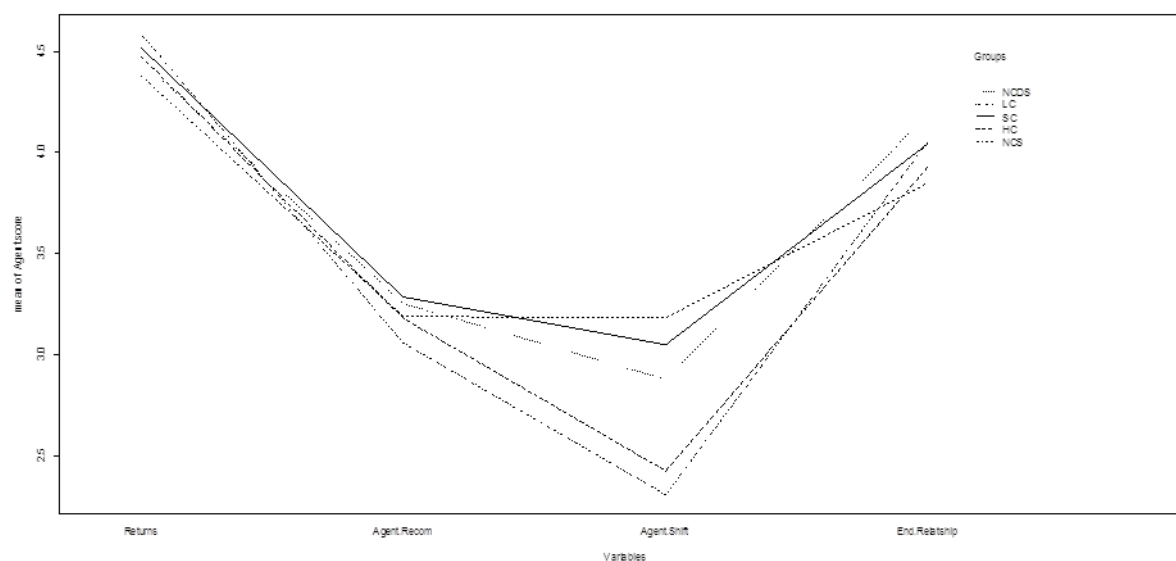


**Figure 4.45: Recommendation**



**Figure 4.46: Shift companies**

The largest difference between marketing strategies relates to the question around switching company if an agent switched (Figure 4.46). High and Low Committers are very unlikely to go with their agent, while Switchers and Sometimes Committers are much more likely to go with the agent. Non Switchers have the highest average score for the loss from ending relationship with the agent, which reinforces the reliance these producers have on their agent for convenience and to take care of the selling process for the producer.



**Figure 4.47: Sensitivity to rewards and agent by Marketing Strategy**

**Table 42: Sensitivity to rewards and agent average score by Marketing Strategy**

	Returns for targets	Take up new plan if agent recommends	Would shift with agent	Big deal if end relationship with agent
<i>Mean</i>	4.5	3.2	2.7	4.0
<i>Std. Dev</i>	0.9	0.7	1.1	1.2

## 7. Summary of Results

The survey aimed to capture the differences in producers selling behaviour, the factors that could influence their behaviour, and the nature of their relationship with processors. Results highlight that producers carry out a range of different marketing strategies. These differ primarily by whether or not producers always, sometimes, or never commit their lambs to one company. Secondly, producers that always or never commit can be differentiated based on their level of buy in to each channel. For each of the different marketing strategies, there are different factors that play important roles in their decision making be it price, relationships, convenience or targets. These factors are explored in more detail in the next chapter.

Constructs were created to differentiate producers. Differences in strategic orientation, values, and some demographics were found between the producers carrying out different marketing strategies. Overall producers were found to be quite similar in their orientation towards production and cost factors, but differ in their orientation towards the consumer market, and whether or not they like the risk that comes from trading. Overall producers vary in the nature of their selling behaviour in terms of the extent of their leadership and bargaining power and whether they actively support one company. The values of a producer are important, namely the level of conscientiousness a producer has in relation to their selling decisions and behaviour, and the degree of desire for convenience and autonomy when making selling decisions. The nature of the relationship between producer and the buyer, being the agent, representative or company also differs between producers. Some producers have trusting and close relationships, while others have more adversarial relationships that are



primarily seen as necessary rather than beneficial. Differences in marketing strategy and selling behaviour are found to be related to strategic orientation, values and relationships.

The models illustrate that from a selection of strategic orientation, selling behaviour, values, and relationship constructs and a number of demographic variables, there are a limited number of strategic orientation and values constructs that have the majority of influence in determining the difference between producers that carry out different types of marketing strategies. The strategic orientation constructs of Market Focus and Trader have an important influence in the level of buy in to a channel. Market Focus has a particularly high correlation with Conscientiousness, but also has positive correlations with the other strategic orientation construct of Trader and the selling behaviour construct of Influencer. Trader also has a positive correlation with the Market Focus construct as well as Influencer, and the relationship construct of Adversarial. Therefore while some of these constructs are not compelling enough to be in the model, they are likely to have a high influence on the differences between producers as well. The three values constructs were highly influential in differentiating producers in all three models.

Relationship status does play a role in the model of the level of buy in to a marketing strategy. Low Committers were shown to have more trusting relationships than High Committers in some instances, and this may relate to the extent Low Committers rely on their agent or company representative to carry out selling activities for them. The Adversarial component had a positive correlation with Trader and Convenience components, and this may indicate that the Adversarial relationship status may have some bearing on the difference between Switchers and Non Switchers. The proportion of producers that have a main relationship with the three types differs for each group of marketing strategy. Therefore while the status of the relationship may not have a large influence on the marketing strategy, it is important to note the different preferences that they types of producers have in terms of their main relationship. This would need to be considered if and when attempting to try and change producer behaviour.

Some demographics were included in the models, but this was generally at a lower level of importance. The exception was Location, with Otago-Southland producers generally more likely to be Committed, High Committer, and Non Switchers. This illustrates that the other demographics variables are not important in differentiating producers. A producer can carry out the same marketing strategy regardless of age, education, debt levels or land class. This result shows the importance of producers' personality characteristics which are more influential on their selling behaviour than traditional demographics.

The main driver behind the nature of the constructs and the effect they have on marketing strategies is the extent to which producers analyse and care about selling decisions, and how involved they are in the process. This illustrates that producers look at the role of selling lambs as part of their business differently and indicates that some producers may feel more proclivity towards being involved with selling decisions than others. This could be attributed to the skill set and resources of the producer, but may also be based on the producer's perceptions of the relative cost and benefits from investing in involvement in selling decisions.

Therefore it can be confirmed that the strategic orientation and values of producers do have a relationship with the producer's choice to commit or not as proposed in Figure 3.3. While the relationship status did not have a large degree of influence on the decision whether or not to commit, it would seem that there is a connection between the main type of relationship (with a meat company, meat company representative, or third party agent) and a producers marketing strategy. Of importance is the factors that were not included in the models to a large extent namely relationship quality and the majority of demographic variables.

The second part of the first hypothesis investigated the relationship between the producer's strategic orientation and values, the perception of solution attributes and the level of buy in to the commit or not commit channel. This was investigated by examining whether producers entered into the commit or non commit channel for different reasons based on their marketing strategy.

Reasons for and against commitment do not vary greatly between the groups. While there are some differences in the order of most important reasons, in general the same top three reasons come across as most important for both groups of Committers and Non Committers. There were greater differences once the most popular second and third rankings were analysed, which illustrates that while the most important reasons are similar between producers, secondary and tertiary reasons are somewhat more disparate.

While space is the primary reason both High and Low Committers chose to commit, there is a much higher proportion of Low than High Committers (60% c.f. 45%) that ranked space as the most important reason. High Committers also value highly the price certainty that comes with fixed prices, and premiums of committing. Low committers rate premiums as the second highest reason, followed by for the good of the industry. An even proportion of each Committer group value premiums as the most important reason (around 15%).

There is a difference between Switchers and Non Switchers if the order of their second and third most popular reasons. While both groups rank preferring to have control of selling decisions as most important on average, Switchers rank the lack of fit with current farming operation as second, which could align with their higher Trader score. Non Switchers rank the satisfaction of current plan as second which could align more with their higher Conveniences scores.

While the most popular reasons are generally similar for each level of buy in, there are some differences in secondary and tertiary reasons. These differences cannot readily be linked back to the differentiation between types of producers for those that commit. Therefore it seems that the marketing strategy has a mixed degree of bearing on the perceived attributes of a solution for the level of buy in to the channel. While the primary reasons producers carry out the marketing strategy they do is generally the same, there are some differences for the secondary and tertiary reasons. The hypothesised relationship between a producer's strategic orientation and values, the perceived attributes of a solution, and the buy in to marketing channel as illustrated in Figure 3.3 cannot be strongly supported. Producers that have different marketing strategies can perceive the attributes of the solution in the same way, even if they have a different level of buy in to the marketing channel.

Producers' use of information sources illustrates the importance of the personal relationship with either a company representative or a third party agent as a source of information. Some producers are more service orientated than others, and the most important services differ by marketing strategy. In general there was a high level of consideration for many variables when a producer considered changing companies. However there is quite a high standard deviation among responses. Fairness of treatment of suppliers was the main reason for changing companies, however this variable may be perceived differently between groups of producers. Price has an influence on producers' behaviour in terms of switching companies, committing, and breaking commitment. However the degree of influence seems to be tempered by the producer's value of other aspects such as securing processing space, relationships or agreements made and to an extent the values of the producer.

This chapter has outlined the results from the survey and data analysis. The results have illustrated that producers can be differentiated based on their marketing strategies, and that different factors influence producers in different ways. The meaning of these results is further examined in the following chapter.

## Chapter Five Discussion and Conclusions

A general lack of understanding of producers' decision-making processes in relation to selling decisions limits the effectiveness of any attempts to change their behaviour. The topics of producers' marketing strategies, the integration of supply chains, and the nature of supply chain relationships have been investigated. There seems to be many factors that can possibly influence the complex selling decisions of producers. This research has attempted to navigate through the many variables to establish the key factors that affect New Zealand lamb producers selling decisions. The aim was to capture a wide range of factors affecting producers' decision making through a comprehensive survey. This allows the identification and exploration of the selling behaviour of producers, the ways in which producers' behaviour could be changed, and how relationships with processors may be improved.

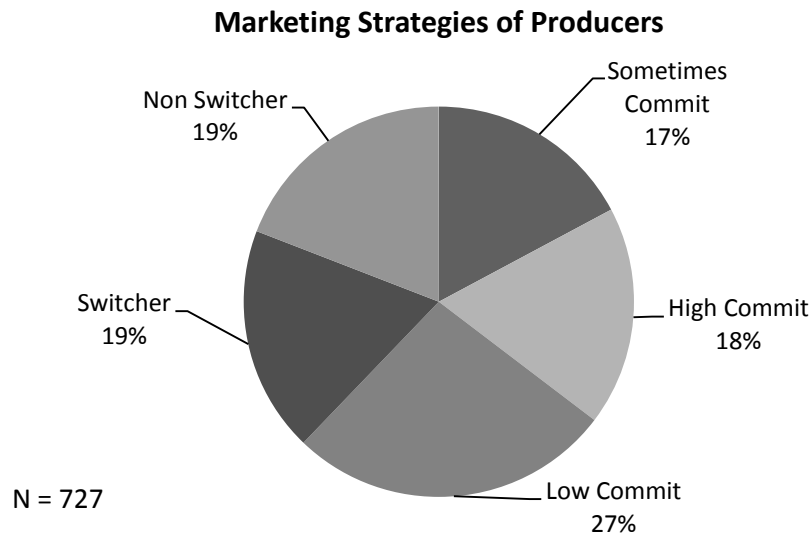
In the previous chapter different marketing strategies of producers were developed, the reasons for their different levels of integration examined and the influencers of their behaviour and the roles of relationships were determined. This chapter brings together the data and information collected and analysed from previous chapters. The first section of this chapter examines the differences in producers selling behaviour, and tries to conclude some of the inherent concepts which may be causing these differences. Relevant theory and empirical literature is used to support or contradict findings from this research.

The second section explores the potential to increase collaboration and commitment of producers and processors. This is done through separate analysis of each marketing strategy and highlights the factors that differentiate producers. This then leads to the extent that each marketing strategy may be influenced to change behaviour and how this could be achieved. Factors that are unique to New Zealand which may influence producers' marketing strategies are examined. The third section examines the role that relationships play in producers selling decisions and how they can be used to improved to increase collaboration and commitment.

The results and discussion are interpreted in the implications section which outlines recommendations for the industry. This section is followed by the limitations of this research which leads to proposals for future research. The chapter concludes with some final thoughts about the study.

### 1. Understanding of producers selling behaviour

The first research question aimed to explore the range of selling options available to New Zealand lamb producers. The chart below highlights the relatively even spread of producers that carry out the different marketing strategies as categorised in the results. The most common strategy is the Low Committers at 27 per cent of producers with the other four strategies spread evenly between the remaining 73 per cent of producers.



**Figure 5.1: Marketing strategies of producers**

One of the most interesting findings from this research is that while producers can enter the same channel (commit or not commit), they can still carry out quite separate marketing strategies based on their level of buy in to the channel. These differences are centred on whether the producer has an active or passive involvement in selling decisions. This paradigm is illustrated in **Error! Reference source not found.** This concept is inherently different to that of other vertical coordination theories (Ferto & Szabo, 2002; Schulze & Spiller, 2006; Wysocki, et al., 2006) which consider the level of integration to be a linear progression from spot market to full integration between companies. In the New Zealand sheepmeat context producers can be differentiated in terms of two types of behaviour. Firstly their choice to commit to one company or not, and secondly whether they are active or passive in their selling behaviour.

	Commit	Non Commit
Active	<b>High Committer</b>	<b>Switcher</b>
Passive	<b>Low Committer</b>	<b>Non Switcher</b>

**Figure 5.2: Marketing strategy matrix**

This research supports previous studies in that the strategic orientation of a producer can either be found to have a strong relationship to a certain channel (Davies, et al., 1999; McLeay & Zwart, 1998; Tsourgiannis, et al., 2008) or that channel choice can be seen as an explicit foundation of the producers overall marketing strategy (Boger, 2001; Davies, et al., 1999; Isengildina & Hudson, 2001; Martin, 1996; Poole, 2000; Schulze & Schlecht, 2009; Tsourgiannis, et al., 2008).

Demographic variables such as age, education and size of farm were found have little effect differentiating marketing strategies relative to personality characteristics such as desire for independence versus security when making selling decisions. Demographics were found to have

limited or mixed impact on strategic orientation in previous studies, and it would seem that strategy is based more on personality. In contrast some studies found some demographic variables to have a significant relationship with the choice of selling channel (Gillespie, et al., 2004; Isengildina & Hudson, 2001; Key, 2005; McLeay & Zwart, 1998). Nevertheless it would seem to be of more use to know the influencers and drivers of behaviour when trying to change behaviour rather than the demographic make-up of different strategic clusters.

### 1.1 The role of transaction cost economics theory

Previous studies investigated whether the impact of search, negotiation and monitoring costs was related to a producers selling channel. This was not directly examined in this study as previous studies had not confirmed that the choice of selling channel is influenced by transaction costs (Boger, 2001; Ferto & Szabo, 2002; Hobbs, 1997). However some concepts from this theory can be related to findings from this research.

From Boger's (2001) model of contracting, when asset specific investments exist, then a producer would either be paid a premium, or safeguarded through contracts, or other more integrated transaction models. In the New Zealand lamb industry if producers do not make any asset specific investments (Non Committers), they will generally trade on the spot market which agrees with the transaction cost economics approach. However those that do make investments (Committers) are not always paid a premium or safeguarded through formal contracts.

The theory posits that there will be an increase in contracts to reduce the transaction costs that are created by the transaction characteristics of uncertainty, frequency, and asset specific investments. However it seems that producers may perceive these characteristics differently depending on their human characteristics that cause transaction costs, namely asymmetric information, bounded rationality, and opportunism. In several of the studies the models combined transaction costs (that are based on perceptions) such as uncertainty with external factors (that are based on fact) such as the number of buyers in a market. While the impact of producers' human characteristics was not explicitly examined within this study, it did show that producers do differ in their willingness to deal with uncertainty, and with their perceptions of the importance of searching for, negotiating and evaluating different selling options. There is a link between the activeness of a producer in selling decisions and their marketing strategy, but not necessarily their channel choice of commit versus not commit. This suggests perceptions of transaction costs differ between producers. This highlights the need to establish an objective measure of a producer's decision-making ability, or to acknowledge to a greater degree the subjective nature of a producer's view of transaction characteristics such as uncertainty.

Generally, the main factor that safeguards any investments in New Zealand is the strength of relationship, or a form of interdependence between the processor and producer. This is due to the low level of asset specific investments that are generally made or required and the small proportion of transactions that are formally contracted. In the New Zealand lamb industry there is not a high degree of asset specific investment compared with some other overseas industries that tie producers in to certain programmes through particular costly investments the producers must make. The only case in New Zealand is where the producer is part of a specialised programme linked to an end consumer and may need to undertake breeding and feeding programmes. Equally a processor will generally take lambs from any producer as long as they comply with a farm quality assurance programme which guarantees that lambs have been produced in a manner that meets export requirements. Even if producers commit to one company, there are few specific investments made that prevent a producer from changing companies. This could in part explain why formal contracts have had limited success

in the industry. The strength of the relationship specifically around increased trust may play a role in reducing the transaction costs linked to asset specific investments (Kwon & Suh, 2004). This suggests that there may be potential for trusting relationships (such as those of Low Committers) to increase the level of asset specific investments made, depending on the level of investment.

Increased transaction uncertainty is expected to increase contracting. This does not seem to be the case in this study as behaviour seems to depend on what the producer perceives as the greatest source of uncertainty, and how they prefer to deal with this uncertainty. Frequency of transaction is similar for most producers as generally all producers need to interact with a buyer at regular intervals based on the natural production and growth cycle of lambs.

A producer's perception of their own degree of asymmetric information, bounded rationality, and opportunism seems to differ. For example a producer who carries out an active marketing strategy either as a High Committer or a Switcher seem to believe that they have a better ability to search for information and limit the opportunism of others through their own behaviour. Whereas Non Switchers and Low Committers feel that they have a low ability to search for information, and would prefer to limit the opportunities for opportunism by carrying out a passive marketing strategy that decreases uncertainty. A link between human characteristics, perceived transaction costs and a producers searching behaviour was hypothesis could be explored in further research examining the role of the human characteristics bounded rationality, asymmetric information, and opportunism. It could be hypothesised that these perceptions would impact more on the level of searching behaviour than the eventual channel choice.

Trust was shown in the literature to be linked to transaction costs. Increased asset specific investments and uncertainty can decrease trust, while increased information sharing, and a common goal increases trust (Fischer, et al., 2007; Kwon & Suh, 2004; Schulze & Spiller, 2006). A degree of fairness of treatment was shown as important in relationships in the literature (Ivens, 2004; Schulze & Spiller, 2006), and was reinforced in this study through fairness of treatment of suppliers being the most important reason that producers have changed companies. A separate study looked into the factors that increase commitment and found this to be affected by the level of trusting relationship, the price orientation and willingness to switch of the producer (Kwon & Suh, 2004). This can be reflected within this study whereby the Switchers core business strategy of being a trader conflicts with increased commitment and collaboration with one company. However this study did not support the idea that producers with more trusting relationships are more likely to commit. Furthermore from this study, producers with low price orientation and willingness to switch are more committed. This can be the case even when this is not in an official commitment programme as in the case of Non Switchers.

Transaction costs economics approach does not seem to be applicable as an explanation of supply channel choice in the New Zealand sheepmeat industry context. This is because the costs of transaction seem to influence a producers marketing strategy in terms of how active or passive they are in their selling behaviour more so than whether they commit or not.

## 1.2 The role of uncertainty

This research has illustrated that uncertainty of production and the domestic market situation plays an important role in determining a producers marketing strategy. Producers seem to externalise their uncertainty as Committers through secured processing space, while Non Committers prefer to internalise uncertainty through maintaining control of selling decisions. For Committers, it would seem that secured processing space is of equal value for both High and Low Committers. For Sometimes Committers the higher importance of price certainty may reflect an attempt to reduce price

volatility or falling prices in certain seasons. For Non Committers, Switchers are likely to internalise uncertainty as they like to be able to make the most of uncertainty through trading. Non Switchers are likely to internalise uncertainty more because they prefer the convenience that comes from not having to meet commitments, which to them would potentially increase uncertainty as they are already satisfied with their current arrangement.

This concept can be compared with previous literature into the impact of external factors and solution attributes on channel choice (Boger, 2001; Fischer, et al., 2008; Isengildina & Hudson, 2001; McLeay & Zwart, 1998). While it could be assumed that most external opportunities and threats such as market and industry factors are similar for all producers, it seems that producers differ in their perceived ability to deal with these external factors. Committers prefer to limit the impact that climatic uncertainty can have on their business by committing to secure space. Switchers prefer to leverage from the uncertainty of weather and market conditions.

Some literature has looked to assess what attributes producers prefer from different supply channel (Bandon, et al., 2009; Popp & Parsch, 1998; Wachenheim, et al., 2001). This study also examines the main reasons behind producers' choice of selling channel. Previous studies found that the provision of certainty was the most popular attribute of more contractual supply channels and this is reinforced in this study with guaranteed processing space being the main reasons for commitment.

These differences could relate to the producers preference for risk and reward sharing. Producers seem to behave differently based on their perceptions of how to manage the level of risk and reward. Those with an active strategy generally take on more risk, through making high commitments or switching because they perceive there is extra reward for doing so. Passive marketing strategies prefer to minimise risk and hence potentially their reward.

## **2. Potential ways to increase Collaboration and Commitment**

The next section attempts to explore potential ways to increase the collaboration and commitment of producers to processors. Each marketing strategy is assessed to identify the key reasons for current behaviour, the differences in the types of producers that carry out the strategies, and the factors that have the most influence of each strategy's selling decisions. Lastly any factors unique to New Zealand that may be impacting on selling behaviour based on the analysis are investigated. More specific factors related to means to increase collaboration are outlined in the Implications section.

### **2.1 High Committers**

High Committers are characterised by their high level of buy in to a commitment channel through meeting tighter price and or delivery specifications, and have an active involvement in selling decisions. High Committers are conscientious, and are the marketing strategy most interested in what is going on in the consumer market. This combination of traits means that they are willing and able to meet tighter specifications in terms of price and delivery. They see selling decisions as playing an important part of their overall business strategy, and will make changes to production activities that are tied in to marketing decisions. High Committers are similar to the Prospectors from Miles, et al., (1978) in that they are proactive in their behaviour and seem to be more entrepreneurial than other marketing strategies. Differentiation was an important construct in several previous studies that created producer typologies (Davies, et al., 1999; McLeay, et al., 1996; Tsourgiannis, et al., 2008) and can be likened to the Market Focus construct from this study. Differentiation relates to making a product more valuable in some way. The Market Focus construct from this study relates to being more involved in post-farm gate activities and trying to work with the processor to better meet

consumer needs, and thus produce a product that is more valued. Within the High Committers (and potentially Switchers) there are likely to be a proportion of producers who have much stronger entrepreneurial focus and are taking their marketing strategy closer to the end consumer such as directly selling to supermarkets or farmers markets. While the Market Focus construct is the main factor that differentiates High and Low Committers, this factor is overpowered by the level of conscientiousness a producer has when differentiating committers from non committers.

While these producers like to have involvement in the selling process, they do not require full control of the process and are willing to lose some control to be part of the bigger picture of delivering the required product to the market. Some control is given to processors in more coordinated and committed supply channel through commitment to dates and numbers of livestock delivered. However as formal contracts do not often exist, producers still retain ownership and control of the final selling channel for livestock. In addition the level of interdependence varies season by season and throughout the season depending on the state of climatic conditions.

High Committers have a connection with their meat processing company and are the most company focused marketing strategy. These producers perceive a difference in companies, and the prices that companies pay. This perception results in the producer believing in the strategy that their company has and where they as a producer fit in to this strategy. The producer is therefore willing to go to more of an effort to produce lambs for the company that meet the required specifications. These producers can be thought to sit at the more integrated end of the supply chain interactions with higher degrees of mutual interest, long term relationships, shared benefits, open information sharing, stability, and interdependence (Wysocki, et al., 2006). Producers with an active marketing strategy are willing and able to search for information themselves and evaluate this information to make their own decisions. These result differ somewhat from previous theory that suggest increased integration of supply chains leads to greater relationship quality (Cox, 2004; Ferto & Szabo, 2002; Fischer, et al., 2007; Fischer, et al., 2008; Gray, et al., 2006; Ivens, 2004; Matopoulos, et al., 2007; Peterson, et al., 2001; Schulze & Spiller, 2006; Trienekens & Beulens, 2001; Wysocki, et al., 2006; Young & Hobbs, 2002; Zanquetto-Filho, et al., 2003).

High Committers value more highly the services processors provide such as market information, producer groups and technology for feedback. These producers do not value the provision of a livestock drafter. They are more willing to use the information available to make their own decisions, and most likely draft their own lambs. These producers are the ones that most likely attend company supplier meetings and are interested to learn about what the company's strategy is going forward. These producers gave high consideration to the company's vision and leadership within the industry, in-market behaviour, transparency of operations, innovation in activities, and partnership with suppliers when looking to change companies.

These producers are influenced by the provision of targets and rewards for meeting targets, partnership with the company, and any potential area for closer collaboration. These producers value a high level relationship with a meat company, and the drivers of this relationship are different than those producers who have dependent relationship with their buyer. There is potential to bind these producers in closer to the company by rewarding them more with greater rewards for meeting specifications, provision of more in-depth information above what regular suppliers get, and an increased level of services. This collaboration incentive needs to come from the meat company executive. There is potential to increase asset specific investments for these suppliers combined with more formal contractual arrangements. These producers had the lowest propensity to switch companies once they had committed at any price level examined, which illustrates their loyalty to the company and its strategy.



From the sample that was allocated to this marketing strategy, around half were located in the East Coast and the other half located in Otago-Southland. This illustrates that location is not a factor of high importance for differentiating High Committers. The combination of conscientiousness and a market focus result in these producers being relatively more passionate about the entire supply chain for their lamb. This effects their inherent belief system about how they meat industry needs to be structured and the role that producers play in the supply chain. These traits are irrespective of their demographics such as the type of farming operation, age, or debt levels. High Committers are likely to struggle to accept the selling behaviour of the other marketing strategies, which they are likely to consider as detrimental to the industry.

## 2.2 Low Committers

Low Committers are characterised by their low level of buy in to a committed channel through primarily only meeting an annual commitment of lambs to one company. These producers are passive in their selling behaviour, and commit to one company primarily to secure space which reduces uncertainty. Low Committers are similar to Defenders whereby they protect their position and remain stable by securing space (Miles, et al., 1978). Risk avoidance was not found to affect channel choice in Fischer, et al., (2007), however in this study a producer's ability to react to risk seems to relate to their choice of channel. Producers that want to minimise the risk of a lack of access to processing space are more likely to commit, while others do not see this risk as an issue. Furthermore producers that undertook more production or stability focused orientations were more likely to enter into contracts to reduce risk, and keep transactions simple and standardised (Fischer, et al., 2007). Similarly Low Committers have no desire to be involved in more market oriented activities, but commit to decrease uncertainty and standardise selling decisions.

These producers prefer convenience and autonomy of selling decisions. This results in these producers having trusting relationships, primarily with a meat company representative, yet their preference for autonomy and lack of market focus prohibits greater integration with the company. Low Committers had the highest scores for relationship quality and this in part reflects the dependence that these producers have with their buyer. The relationship represents an important part of the selling decision for these passive committers. Therefore the buyer may have a higher degree of influence over these producers than the High Committers.

These producers remain loyal to one company due to the certainty this provides in terms of guaranteed access to space. This is reflected by the greater willingness of Low Committers to commit for lower or zero financial incentive, due to the non-pecuniary benefits commitment provides to them. The provision of an avenue for the sale and purchase of store stock by companies is important to these producers and reinforces the importance of a guaranteed market for their stock and the greater unpredictability in their farming systems. This may relate to the fact that 80 per cent of Low Committers are located in the Otago-Southland area, which can be characterised by shorter pasture growth periods, and a higher peak in the production and slaughter period for the bulk of lamb supply in this region.

## 2.3 Sometimes Committers

Sometimes Committers are the marketing strategy that has committed their lambs once or twice in the last five years. These producers were more likely to commit under a fixed price system than other committers. Price certainty is the main reason this marketing strategy committed rather than guaranteed processing space which was the main reason for High and Low Committers. Sometimes Committers have the lowest ranking for guaranteed processing space as a necessary service. This

illustrates that these producers most likely operate farming systems that are not pressured to gain access to processing space.

These producers were analysed as Non Committers in the modelling regression and so they are generally less conscientious than High and Low Committers. Sometimes Committers were moderate in their price sensitivity, importance of services, and level of consideration when changing companies. Sometimes Committers have some similar traits to Analysers whereby they tentatively explore opportunities while keeping security in their operations (Miles, et al., 1978). Sometimes Committers had the lowest overall relationship score, and do not seem to have a strong connection to any one type of buyer in particular.

While these producers were drawn to committing for price certainty potentially following a season of volatile or low prices, for a number of reasons a proportion of these producers decided to stop committing. The reasons centred on an adverse weather event which resulted in producers deciding that committing did not suit their farming operation. Those producers that entered fixed price contracts may have also experienced a year where the schedule price went above the fixed price, and therefore they felt that contracts were not worthwhile. Therefore these producers are particularly sensitive to committing and may illustrate the issue of compatibility of commitment programmes to different farming systems, the need for flexibility and tailoring of programmes to suit individual farm needs. There is a slightly higher proportion of Sometimes Committers in the East Coast, with 58 per cent compared to 42 per cent in Otago-Southland.

## 2.4 Switchers

Switchers are characterised by their focus on trading. The Trader construct relates to carrying out activities to try and maximise returns from the product by attempting to buy and sell product at certain times based on market conditions. While this can be considered similar to the Arbitrage strategy (McLeay, et al., 1996) it could also be seen as a form of differentiation. This situation lies to the left hand side of Wysocki, et al., (2006) table of strategic options for vertical coordination and is characterised as shown in the literature by self-interest, opportunism, limited information sharing, flexibility and independence. However this option does not necessarily lead to short term relationships. As identified in this study, producers carrying out a Switcher strategy generally have high quality relationships particularly with a third party agent.

Switcher can be considered to be adding value by selling their product in a market that is short of supply if they are selling it at certain times of the year. In peak supply periods, they may not be targeting a certain market, but they will still sell their product to the processor that values highest on the day the type of lambs they have available. This can be contrasted with other processing companies that accept all lambs the producers have available to give them, regardless of what is required by the market that day.

This desire for flexibility in sales channels is an inherent difference from other marketing strategies as the ability to have full control and evaluation of a number of different selling channels is a pivotal part of this marketing strategy. These producers also have a higher level of bargaining power and influence in selling decisions. In investigating the impact of strategic orientation on a producer's choice of selling channel McLeay, et al., (1998) found that entrepreneurs with more market knowledge were more likely to enter spot market transactions. Fischer, et al., (2007) similarly found that producers with a higher desire for independence are less likely to enter contracts, and those with a long term orientation were more likely to enter contracts. The appeal of contractual certainty is seen to be reduced if a producer has the ability or desire to undertake other management strategies that increase market knowledge (Blandon, et al., 2009; Isengildina & Hudson, 2001; McLeay & Zwart,

1998) and this is also reinforced in this study through the Switchers marketing strategy. These producers carry out an active selling strategy and will spend the most effort searching for current market situation information and evaluating alternatives, either independently or through a third party agent. This research reinforces that producers will differ in their information searching and selling decision behaviour based on whether they are active or passive, as has been alluded to in previous studies (Bunn, 1993; Diekmann, et al., 2009; Feeney, et al., 2011; Gloy & Akridge, 1999; Gunderson, et al., 2005; Kool, et al., 1997). These previous studies established that producers differed in their level of desire and ability for involvement in decision process for buying goods. This study illustrates that a similar situation exists in a producer's desire and ability for involvement in selling decisions.

Switchers desire to internalise uncertainty and the belief that they are better equipped to deal with the potential for opportunistic behaviour, and have greater information than other parties. The desire to retain control means these producers require the highest financial incentive to commit, and the preference for trading means these producers are most likely to switch companies for smaller financial incentives. Switchers place the most value on achieving the highest price, and are willing to trade this off against convenience, security and service. They feel little connection to any one company, and have little requirement for services provided by a company.

The producers that carry out this marketing strategy would be the most difficult to get to join more integrated committed supply programmes, as they see little value in committing. They like to internalise the uncertainty of seasonal production factors and feel little connection to the market strategy of meat processing companies. Switchers do however take on extra risk when carrying out their marketing strategies that enables them to supply processors at times when overall lamb supply is limited. Switcher's risk that processing space will not be available when they need it and that price will not go the way they are expecting. These producers face potentially greater information search and negotiation costs than other marketing strategies. Around 75 per cent of the sample that carried out this marketing strategy is located in the East Coast. This may be related to the longer pasture growth cycle in general, however the East Coast has experienced several years of drought over the past five years. Therefore it would seem that these producers carry out this strategy in spite of challenging climatic and production conditions or in fact to some degree because of it.

## 2.5 Non Switchers

Non Switchers are characterised by not committing to one company, yet having passive involvement in their selling decisions. The producers seem to be complacent in their selling decisions and prefer another party to take care of selling arrangements for them. Non Switchers are similar to Reactors whereby they seem to lack any clear strategy and only respond to the competitive environment (Miles, et al., 1978). This is related to their high score for convenience, and lower concern for trading than their Switcher counterparts. Previous studies investigated the differences between producers that consider different factors most important when making purchasing decisions such as price, performance, convenience or a balance of factors (Feeney, et al., 2011; Gloy & Akridge, 1999; Gunderson, et al., 2005). Similarly in this study there is a difference between producers marketing strategies based on what they find most important in their selling decisions with Non Switchers shown to place the most value of convenience.

These producers are satisfied with their current selling plan, and have little desire to change. Non Switchers are more likely to use a third party agent for selling decisions and as a source of information. These producers have a high reliance on these agents. The provision of a livestock drafter is considered a very important service to be provided by a meat company as these producers

prefer not to have to make these decisions themselves. These producers consider it the biggest issue if their relationship with their agent were to end.

Non Switchers do not value very highly other services provided by companies and have little connection to the company they supply. Non Switchers have moderate sensitivity to price and reward incentives. These producers would prefer not to change their selling behaviour but will do so at the higher end of price incentives. In general these producers are averse to committing as this would create a source of uncertainty for them. These producers would find the idea of signing up to a commitment that required them to meet delivery of lambs by certain dates a burden. Non Switchers generally do not like to be involved in selling decisions and commitment would create the need to be more concerned about selling decisions and potentially impact on their production activities. These producers were relatively evenly split between islands with 60 per cent in the East Coast and 40 per cent in Otago-Southland.

## **2.6 Factors unique to the New Zealand Industry**

The final question of the second section of questions asked whether there may be factors unique to the New Zealand sheepmeat industry that may impact selling decisions relative to other industries or countries. The main area of difference in the New Zealand sheepmeat industry is the seasonality of production and the inherent uncertainty around production. The New Zealand sheepmeat industry is founded on seasonal grass production, which leads to free range production and cost efficiency of production. However the link between climatic conditions and lamb production creates uncertainty in the timing and quality of lamb production, processing plant efficiency and market prices. This uncertainty has been found to have a strong relationship with the nature of producers selling decisions. Therefore it can be concluded that the seasonal nature of production and the uncertainty of climatic conditions does create unique factors that influence producers selling decisions in comparison to other industries and countries.

New Zealand lamb is predominantly exported. This may have an impact on the behaviour of producers as those with less involvement in selling decisions may feel some level of disconnect between their production on the farm and the final consumer of their lamb. In addition, there is generally a low level of formal contractual obligations within the New Zealand sheepmeat industry. Commitments are often based on informal arrangements between producers and their buyers and companies. This may relate to the low level of asset specific investments that are made, and the general low switching costs that would alleviate the need for producers to safeguard investments.

Given the lack of asset specific investments, contractual arrangements and in some cases existence of guaranteed premiums for committing, it would seem unnecessary for producers to commit. However the non-pecuniary benefits from committing, particularly the security of processing space and the way in which committing appeals to the conscientiousness and market focus of some producers provided incentive for producers to commit to one company. Other producers however prefer to retain control of selling decisions, and either prefer to minimise the time spent on selling decisions, or prefer the flexibility to be able to sell to the company that is offering the best price on the day.

## **3. Relationships**

The final section of research questions related to the type and quality of relationships producers had in the supply chain, and whether relationships could be improved and used to increase collaboration and commitment. The differences in the types and quality of relationships for each of the marketing strategies are outlined in previous sections. All different marketing strategies are shown to have good

relationships in general. Passive marketing strategies are shown to have closer relationships than active marketing strategies.

Previous literature can be reviewed to examine the nature of business relationships between producers and processors and what the reasons are behind closer collaboration, and equally the challenges that are limiting successful collaboration in the New Zealand sheepmeat industry. Some of the main reasons cited as driving increased collaboration include supply chain efficiencies, food safety, cost reductions, information sharing, sales growth, and improved marketing (Matopoulos, et al., 2007). In general these factors relate more to the processors benefit than to the producer. Drivers for collaboration for producers could relate to increased information sharing from processors, and there are some cases where more information is shared with producers that take part in more integrated supply programmes. Risks of collaboration include failure of collaboration projects, and an increased level of dependence on the other party. In the past some collaboration projects have failed in the New Zealand sheepmeat industry, primarily due to unforeseen climatic conditions that provide incentives for either party to break collaboration commitments. While generally either the producer or processor wishes to stick with the collaboration, weather events can lead to a power imbalance generally created by the supply and demand of livestock that can cause severe variations in prices. Collaboration can lead to increased dependence on the other party which is linked to the level of trust that each party has in the other. In general dependence can be successful as long as the party who has the dependence trusts that the other party will not act in an adversarial manner.

In some cases uncertainty leads to collaboration and a dependence as a producer commits to secure space. In other cases this uncertainty reduces collaboration, for example as Switchers prefer to internalise this uncertainty. Overall the nature of the relationship the producer has when making selling decisions is very important. In some cases the other party can have a direct influence on the selling behaviour of the producer, or at least has the ability to persuade or encourage the producer to make changes to behaviour. In other cases while the relationship does not play as large a role in the selling decisions, the other party still plays a critical role as informant and provider of information to enable the producer to make decisions. Therefore overall the next step in the supply chain is intrinsically linked to the behaviour of producers at the foundation of the value chain. More explicit descriptions of how relationships may be used to change behaviour are covered in the implications section. In summary, the relationship between producers and the buyers of their lamb is generally of good quality and therefore this avenue is available to increase collaboration and commitment.

#### **4. Implications**

There are two main points that need to be considered in terms of the implications of this research for the New Zealand sheepmeat industry. Firstly the differences between producers marketing strategies need to be acknowledged and identified. Secondly the key factors that may encourage or prevent behavioural change must be determined.

It is important for policy makers, industry stakeholders, and processing companies to acknowledge and respond to the differences in producers marketing strategies. Producers differ in their choice of whether to commit to one company or not, and also in their desire for active or passive involvement in selling decisions. High Committers prefer to be involved while giving away some control of selling decisions. Low Committers do not wish to have further involvement in selling decisions, yet prefer a certain level of control. Switchers prefer to have full control and are actively involved in selling decisions, while Non Switchers do not wish to have any further involvement in selling decisions. These preferences for involvement have fundamental influence on a producer's selling behaviour and

will heavily affect any efforts by parties to try and change producer's behaviour. For example it must be acknowledged that for some producers such as Switchers, committing to one company goes against core aspects of the strategic orientation for their business. For these producers the ability to remain flexible and have autonomy of selling decisions to be able to respond to changing market conditions is fundamental to their business strategy. Furthermore commitment is often more than deciding to only sell to one company. With commitment comes a reduction in flexibility other than just the company a producer sells too. Commitment can impose new requirements on producers such as needing to meet production targets. For some producers, particularly Non Switchers, this will create extra uncertainty and this must be acknowledged.

The creation of marketing strategy typologies and the identification of the factors that most influence each group can allow for the targeted segmentation of producers to influence behaviour. Segmentation of procurement plans would provide producers with procurement options that better suited their strategic orientation and values and may assist in influencing producers' behaviour more effectively. There is an opportunity to use this research to create a mechanism to identify which producers fit into which marketing strategy. This research has identified key factors that can influence producers in each type of marketing strategy. The factors that influence producer's behaviour relate to their strategic orientation, values, selling behaviour and key relationships. These factors influence how price sensitive producers are, how influenced they are by their main relationships, and how willing they are to change behaviour.

The study showed that some producers are more willing than others to change their behaviour for smaller price incentives. However any changes to behaviour would need to align with the producer's strategic orientation and values. Some Low Committers are willing to commit for no financial benefit, as this commitment satisfies non-pecuniary factors. Similarly Non Switchers do not commit, not necessarily because they are wishing to capture the highest market returns on the day but because this strategy matches their desire for low involvement in selling activities.

For High Committers there is potential to appeal to their conscientiousness and market focus through providing more information, more specified targets that generate rewards, and generally closer collaborative relationships to build on the connection with producers and appeal to their orientation and values. There is potential to make these arrangements more contractual which would remove a certain amount of uncertainty for processors due to the low asset specific investments and low switching costs that currently exist.

To appeal to the producers with passive marketing strategies, the Low Committers and Non Switchers channel choices need to remain simple and convenient. Selling decisions are not a high priority for these producers, and generally these producers would either prefer a third party agent to deal with these decisions, or to play an inactive role in these decisions. Sometimes Committers would require increased encouragement to commit their lambs again, because while they have tried in the past, for whatever reason they decided that committing was not compatible with their farming systems. Therefore for these producers, as well as Non Switchers, a procurement programme needs to be developed which is flexible enough to be compatible with different farming systems, and must offer incentives above guaranteed processing space. These producers can be influenced by price incentives to commit, but will not be willing to make substantial changes to their farming business to meet commitments. The role of the company representative or agent is crucial is encouraging participation in a new commitment programme. Sometimes Committers will be hesitant to enter fixed price contracts, and will need to see tangible benefits from commitment.

Switchers would be very difficult to get to commit to one company. These producers are influenced primarily by price and the strategy of their own business and are not concerned with the overall

company or industry strategy. Therefore trying to convince these producers to commit for the good of the company or the industry will not be successful. These producers value fair treatment of suppliers, and therefore will avoid companies that penalise producers that do not commit. The foundation of Switchers selling behaviour is based on their control of decisions and the ability to be flexible in sales channels. These producers play an important role in the industry as a buffer in periods of short supply of lambs for companies. These producers target gaps where they see potential to make money which usually carries some sort of increased risk. This risk can relate to issues securing processing space at times when supply is strong, or having to sell at lower prices if the market does not go the way they expected. Switchers are influenced by financial incentives including the peak market prices at the shoulders of the season. Therefore there is an important role that these producers can play within the industry. This behaviour can complement supply chain efficiencies through supplying processing plants at times when overall supply is short. Producers from other groups must concede that they find value in their preferred marketing strategy because committing generally reduces this risk.

The type of relationships producer's value most varies by marketing strategy. For some producers, primarily those that carry out a passive marketing strategy, the relationship with a company representative or third party agent plays an important role in selling decisions. This highlights that the role of these intermediaries is still very important for many producers as a source of information and advice. While High Committers prefer to make their own drafting decisions and Switchers favour the independence that a third party agent represents in assisting their selling decisions, Low Committers and Non Switchers rely on livestock drafters to arrange and carry out their selling decisions.

Non Switchers and Low Committers have a strong convenience focus and a high reliance on the buyer, either the meat company representative or the third party agent, to organise and arrange selling decisions. Therefore there is potential to use these third party agents and representatives more to work with these producers who prefer convenience to develop this relationship further. In some cases, the drive for increased commitment may currently come more from the meat company executive, with whom not all producers consider their main relationship. Particularly for the Low Committers and Non Switchers who are both generally loyal to one company and have a high level of reliance on the representative or agent, there is potential to influence their behaviour through these relationships.

Given that Non Switchers and Low Committers are passive in their selling behaviour there may be an opportunity to increase the awareness of where their product is sold that may increase their involvement in selling decisions. An increase in the flow of information and feedback from the market may then be conducive to increasing producer buy in to more committed programmes. This would best be carried out by meat company representatives. It may be that currently little market information is being passed back to producers through meat company representatives or third party agents. This may be creating a disconnect between producers who are not actively seeking market information and the final market for producers lamb. This break-down in communication may need to be addressed by an improved connection and flow of information between the marketing and sales division of a meat processing company and their lamb procurement team.

High Committers have a stronger market focus and tend to have a stronger connection to a meat company. High Committers feel little need for a meat company representative to be involved in their selling decisions, as they prefer to gather information to make these decisions themselves. For High Committers, it would seem more important to develop the relationship from a meat company executive perspective and appeal to their desire to work closely with the company to deliver to the end consumer.

While attempts can be made to appeal to the incentives that influence producers' behaviour and to make use of the relationships that producers value, factors outside of the control of producers can be the largest barriers and enablers that will remain a dominant factor in the future uptake of more committed supply programmes. Nevertheless producer's personality characteristics will play a role in how they perceive the risk and benefits of commitment.

Processing space is generally the primary reason producers commit, however there are other reasons such as premiums, price certainty, information, targets, and for the good of the industry that also play an important role. This illustrates an opportunity to increase the formality around commitment for some producers. There is potential to remove the ability or temptation of current committed producers to switch companies by appealing to the factors they prefer most about committing, rather than, or in addition to, giving producers a monetary incentive to commit. If processors were to balance tighter commitment restrictions with the provision of extra premiums for meeting targets, and greater market information above what Non Committers receive this would appeal to the Committers' conscientiousness traits.

There may be some complementarities that are driving the uptake of more committed supply from producers in line with James, et al., (2011). In New Zealand, the supply of livestock has a large impact on the availability of processing space. As the size of the national sheep flock changes relative to the processing plant capacity, this is likely to affect the relative importance producers place on having access to processing space and hence the predisposition to commit. This change could also occur between seasons based on climatic conditions and grass growth which impacts on processing space availability within a season. External drivers of collaboration have been increasing through increased global regulations around traceability and food safety and the desire from customers to know where their food comes from. Technological developments such as electronic identification may lead to greater commitment from some producers as they increasingly perceive advantages from traceability of livestock through to processing and increased feedback from processors on their performance. These regulations and requirements are likely to become more important and therefore the level of collaboration between producers and processors is likely to increase. Therefore it is crucial for the industry to understand what the barriers to collaboration are for producers and to discover ways to overcome these barriers.

Enablers of collaboration include appropriate competencies of people involved (Cox, 2004). This includes having a desire to make the collaboration work, through a common goal with the other party (Zanquetto-Filho, et al., 2003). Currently in the New Zealand sheepmeat industry there does not seem to be a common goal for collaboration. Processors require commitment for supply chain efficiency, and to guarantee supply for markets. However this goal does not necessarily correspond with producers goals. High Committers are the only marketing strategy that has a strong connection with the processing company and their role as part of the supply chain to the end consumer. Another enabler of collaboration relates to even power balances (Matopoulos, et al., 2007). The issue of shifting balances of power depending on the season was highlighted in Chapter One as a barrier to improved collaboration in the New Zealand sheepmeat industry. There is potential for improvement in procurement programmes so that if power balances alter within or between seasons, that one party is not disadvantaged at the expense of the other. Passive marketing strategies may be less inclined to develop a greater level of collaboration with the processing company to limit the dependence upon that company. By not collaborating producers minimise the risk of opportunistic behaviour by the processor (intentional or not) and potentially maximise their own opportunistic behaviour if they so desired. These issues highlight the requirement for active leadership within the industry to

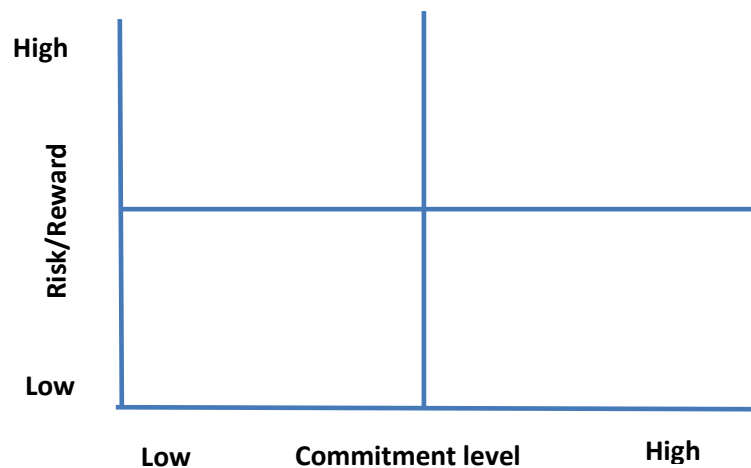


acknowledge and respond to the different types of producers marketing strategies rather than expect producers to change behaviour without a change in environment or incentives.

The features of each solution can also be considered using the innovation diffusion and complementarities theory (James, et al., 2011; Sahin, 2006). A supply channel option may also be assessed by producers in terms of its relative advantage, compatibility, complexity, trialability, and observability as well as the complementarities or forces that are driving uptake of more integrated supply chains. While not all of these factors were considered in the study, the second and third most common reasons producers stopped commitment was due to a divergence between schedule and committed prices and a lack of relative return for the effort required. These factors illustrate barriers to uptake of more committed programmes. If a producer perceives little relative advantage, or even in some cases a disadvantage, there is little desire for them to carry on with that option. The most common reason producers stopped committing was due to the weather which can relate with the compatibility of a programme. Additionally not suiting farming system was the most common reason of second importance why producers stopped commitment. This reason was also the second most popular reason why producers did not commit from the group of producers that never committed. In general it would seem that although there is some flexibility in meeting more specific requirements in terms of timing and number of animals, the uncertainty of climatic conditions leads some producers to feel that committing lambs is incompatible with their farming system.

A factor that seems to be a barrier to increase the uptake of more committed programmes is the lack of compatibility of committed supply programmes with some producers farming systems. This has led Sometimes Committers to stop commitment, and for Non Switchers a lack of compatibility reduces producers desire to commit altogether. There is potential for adapting commitment programmes to make them more compatible with a greater number of farming systems. In some cases programmes could be better individually specified with greater flexibility based on the type of farming system. Furthermore, greater flexibility could be built in to adjust programmes based on seasonal and climatic conditions. This would reduce the aversion of some producers to commit not knowing how climatic conditions will eventuate and the pressure that this may put on farming systems and the producers ability to meet commitments. The study found that it was not necessarily the complexity or requirements that put producers off committing but more so the uncertainty about being able to fulfil these requirements.

Procurement programmes could be designed to vary in the level of commitment necessary, which would relate to the level of risk and reward as in Figure 5.3. In some cases these types of procurement plans are already happening, but there may be potential to develop them further. Producers in a low commitment and low risk/reward area are most likely to be selling lambs at a dollar per head or overall cents per kilogram price on the spot market. In this case the processor takes on the risk of product quality, and therefore the producer should be paid a lower overall reward. Producers with a low commitment and high risk/reward are likely to be those carrying out a trading strategy and sell on the spot market schedule price. Producers with high commitment and low risk/reward may suit to be selling to a company based on a finishing contract, whereby the company takes on more of the market risk, and the producer only needs to focus on production and is paid a price per kilogram of liveweight gain. Producers with high commitment and high risk/reward are more involved with the marketing strategy of a company and aim to meet specific number, dates, weights, and fat grades. These producers need to be rewarded for the extra risk they take on through premiums for meeting tighter specifications. This matrix illustrates the varying levels of production and market risk in the industry, which party takes control of which risk, and how this can influence commitment.



**Figure 5.3: Commitment versus risk and reward**

These different levels of risk/reward and commitment need to be acknowledged. This will be a fundamental mind-shift for some in the industry through registering and accepting that not all producers deserve to be paid identical prices regardless of the level of risk and commitment undertaken.

Until the perceived rewards from increased collaboration outweigh any perceived barriers and risks associated with increased dependence on the other party by the different marketing strategies, there will not likely be any increase in the level of collaboration and commitment between producers and processors. These factors could be linked to the abilities of certain producers. It could be that passive producers are less involved in selling decisions partly because of their desire not to be, but it could also be related to their perceived ability to make selling decisions. This presents an opportunity for increased education of producers who may not yet have the necessary skills to improve their ability and knowledge of how to produce lambs in order to meet commitment specifications. This would need to be tied in to education of why the market requires certain specifications, what these specifications are, and what that means in terms of increased returns to producers. This is necessary to understand if the next step is to increase the uptake of tighter specifications in price and delivery of lambs.

Location was found to be an important factor in differentiating producers that do or do not commit in this study. The type of farm (hill country, breeding, or finishing country) was not found to have a large effect on whether or not a producer commits. Therefore other factors related to the location are important. While the range of companies that operate in each location is not identical, the two larger cooperative companies are operating in both locations, along with one smaller company in both regions, and two to three smaller operators that differ in both locations. Additionally within each company in both regions, there are producers that do and do not commit. From the results, it seems that while location is a variable that is a large differentiator between producers, there are other variables such as producers' strategic orientation and values that are just as important in differentiating producers. Furthermore it seems that producers in the Otago-Southland have a higher score for Conscientiousness from the producers that commit, and also among producers that do not commit.

In conclusion the wider sheepmeat industry must understand and react to differences in producers marketing strategies. Producers selling decisions are fundamentally driven by different sets of factors that relate to a producers strategic orientation, values and relationships. Therefore the industry will not be able to create any sustainable change in producer's behaviour if the same strategy is used to

target each marketing strategy. Features of supply channels that may provide incentive and influence on one type of marketing strategies behaviour will not necessarily work for another. This particularly relates to a call from many industry participants for producers to commit to one company because this is what is needed for the good of the industry. Even among those that do commit, this was a reason of tertiary importance for most. Little traction will be gained in trying to convince producers to commit for the good of the wider industry when their marketing strategy involves a focus primarily on what is happening behind the farm gate and in their own businesses. Producers that prefer to have minimal involvement in selling decisions will need to be provided with sound and sustainable incentives, supply programmes that conveniently fit into their farming systems, and encouragement from their relationships with buyers to make any changes to behaviour.

## 5. Limitations of the Research

There are several factors that may limit the generalisability of the research. Overall this study was of an exploratory nature rather than a strict test of pre-specified relationships between variables. This was due to the fact that little research had been done to look into New Zealand sheep producers selling decisions, as well as the wide range of factors that were identified from the literature that could impact of selling decisions. A survey enabled the exploratory testing of a wide range of variables and relationships. This has led to a framework of concepts that can then be further developed and explored in more detail in a case study as future research.

While many areas for research were identified following the literature review and initial interviews, topics were restricted to keep the survey within a size that could be easily completed by producers without losing their attention or effort put in. There was a trade-off between how many questions should be used for each construct and how to keep the survey within a certain size. This meant that some sections of the survey were shortened, and others removed. Overall this has not had a large impact on the results as there was still sufficient data, information and response to comprehensively cover producers selling decisions. Exploratory factor analysis was used in this research and the constructs developed may need testing in future research to be further validated.

In relation to survey collection, it may be that there is an over representation of producers that have active marketing strategies, as these producers would seem to be more likely to reply to a survey about producers selling decisions. The survey was conducted in a season of higher lamb prices following a period of several consecutive years of declining producer profitability. This may impact the generalisability of the results. If this survey was conducted in the period of declining profitability results may differ as producers behaviour and opinions may change dependent on the medium to long term buoyancy of the market. To counter this issue producers' were asked to describe their behaviour over the last five years. Nevertheless over five years producers' behaviour is likely to alter either slightly or considerably. Producers can easily change their behaviour as illustrated by the Sometimes Committers marketing strategy. Five years was chosen to try and reduce between season variability, but this may need to be tested further in future research. However five years captures a much greater representation of behaviour than solely asking producers what they did in the last season or what they expect to do in the next season.

The applicability of the research to broader supply chain issues is limited as not all selling decisions were covered. The strategic decision and behaviour related to the annual commitment and supply of lambs to one company was the focal point of this research. Several other facets of supply chain behaviour were not able to be covered in this study including the selling decisions for store stock by breeding farms, and more tactical decisions around lamb quality, timing of sales, and breeding and

feeding of livestock. Additionally the decisions of processors have fundamental importance in this area, as they are the driver of the different supply options available to producers. Further understanding of the processors drivers is crucial to create a clearer picture of the dynamics of the producer processor transaction. Nonetheless given the limited amount of research in this area, an increased understanding of the drivers of producer's decisions and behaviour is a valuable starting position. This understanding can be used in a broader context of research and development extension and buying decisions.

## 6. Further Research

Areas to minimise limitations from this research would be to test if there are a greater proportion of certain marketing strategies in different time periods and a different sample group. Further testing of the constructs is also needed to ensure their validity. There are several areas that have emerged from this research that could warrant further investigation. Firstly it would be useful to investigate what factors influence the personal attitudes of producers. For example are these linked to the resources set of producers, past experiences, or the external opportunities and threats. Secondly the hypothesis that linked the human characteristics of producers to how they perceived transaction costs and whether this then influences searching behaviour was not able to be fully investigated in this study. There seems to be a relationship between these human characteristics and involvement in selling decisions which could be related to searching behaviour. However this is not necessarily linked to channel choice, as producers that do and do not commit have varying levels of involvement in selling decisions.

An area for further investigation relates to whether there is a relationship between strategic orientation, marketing strategy or channel choice and the farm production or financial performance. While this study has focused on what impacts a producer's choice of selling channel and whether or not they switch companies, further research could investigate what influences producers production quality decisions. Firstly it would need to be investigated as to what the desired production standards are, and then whether there are any differences in production quality between producers that undertake different marketing strategies or channels. This research could also investigate the relationship between different producer marketing strategies and their average returns over a season or a number of seasons. This information could be used in an educational tool for producers to up-skill on how to produce lamb in order to meet tighter specifications. Currently research extension is primarily focused on on-farm production techniques around soil and pasture management and animal health. Farm management practitioners often see selling decisions as secondary to production decisions. There is potential to increase farm management extension services in terms of how to increase overall awareness of the market and the role producers play in producing food. Secondly how producers can better meet commitment and lamb quality specifications. This can be tied in to the increasing supply of information from processors on producer's lamb quality performance.

A separate area of research could be undertaken to carry out a case study to investigate in greater detail an example of collaboration between producer and processors. This would enable the investigation in greater detail of what are the drivers and enablers of collaboration as well as risks and barriers. This could then be compared with previous literature that has explored this topic in greater detail.

## 7. Final Conclusions

The aim of this research was to investigate the range of selling behaviour carried out by producers, the potential means to increase commitment and collaboration in the value chain for lamb, and the role that relationships with processors may play in this area. This study has found that producers carry out different types of marketing strategies, and that producers can be differentiated based on their level of involvement in selling decisions. This differentiation is illustrated primarily through producer's strategic orientation and values, as well as their location. Producers that carry out different marketing strategies but use the same channel of either committing or not, have similar reasons for this channel choice.

The main difference in reasons for behaviour between producers that do and do not commit is centred on the manner in which producers prefer to deal with uncertainty. This study has discovered that there are clusters of producers who can be segmented based on their strategic orientation, their values, and their current selling behaviour. Furthermore these producers portray differences in their main sources of information, the services they prefer from companies, their price sensitivity, their most important buyer relationships, and factors that have led the different types of producers to change company.

The results also highlight that there is potential to change producers' behaviour. However these incentives must be in line with a producer's core values and orientation. A potential method to influence behaviour seems to be through the relationship a producer has with their buyer (either a company representative or third party agent) as these are the producers' main source of information. However it must be noted that High Committers have a closer relationship with the company than the individual representative. Overall producers have quite high quality relationships with a company representative, the company, or a third party agent. There is real potential for these relationships to be the vehicle to provide the right behaviour change incentives to producers. Furthermore a more consistent approach is needed within the industry as to why commitment is needed, what the ideal level of commitment is, and the benefits to producers from committing.

A comparison with the literature has confirmed that previous findings can be supported in that producers do differ in their strategic orientations, particularly in regards to their focus on selling activities, and that this does have a connection to channel choice. This study reinforces the importance of relationships within supply chain transactions; however there does not seem to be a significant connection between the status or perceived quality of the relationship and the type of marketing strategy or channel choice. It would seem that the New Zealand sheepmeat industry does have some features that are different to other primary industries and countries that may be impacting on the nature of supply chain transactions. The uncertainty caused by seasonal production seems to have a large impact on the nature of producers' transaction based on their personal characteristics and preferences for dealing with this uncertainty.

This research has set out the marketing strategies of New Zealand lamb producers, the key differences between strategies, and what the key drivers are of each strategy. Importantly the research has discovered that all producers are carrying out a marketing strategy of some sort, which is fundamentally linked in to the farm business operations and strategy. Marketing strategies are not just related to the sole decision of whether or not to commit to one company but are intrinsically linked to the core aspects of a producer's farm business, and their own individual management abilities and drivers. Differences in marketing strategies are connected overwhelmingly to the core strategy of producers. These differences have fundamental impacts on the potential drivers of change for producers' behaviour.

The research has clarified and highlighted the producer's point of view of the New Zealand lamb supply chain and commitment to processors. This will benefit producers in future industry discussions about the need for producers to change behaviour by providing a profile of their selling behaviour. This profile can be used to guide discussions by reinforcing that producers do not act in a homogenous manner and therefore a uniform approach will not suffice in attempting to change behaviour. Importantly this study illustrates that there is potential to change producers' behaviour through a number of different mechanisms. In attempting to do so the fundamental intricacies that drive the differences in producers marketing strategies must be accounted for. The decision of a producer whether or not to commit cannot be considered in isolation. This decision is interwoven within many other farm management decisions and therefore a holistic approach is needed to unravel the many elements that factor in to the individual producer's decision.

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## Appendices

### Appendix A Cover letters and information sheet

#### Email cover letter

Good morning,

Where are your lambs going to be sold this year? How much will you get for them? How will you decide between the various options on offer? While higher prices have taken some of the heat out of the debate, there is still a lot of discussion around the issues of the New Zealand sheep industry. I have a keen interest in the New Zealand meat industry and want to increase awareness about what influences your selling decisions.

My name is Jessica Bensemann, and I have chosen this topic for my research as part of a Masters in AgriCommerce at Massey University. This is an independent study, not funded by an external party, but is designed to increase overall understanding within the industry. My supervisors are Nicola Shadbolt, Professor, Farm Management and Daniel Conforte, Senior Lecturer, Agribusiness from Massey University.

I am surveying a sample of producers from the East Coast of the North Island and from the Otago/Southland region. Due to the focus on only two regions it is critical that I get responses from every producer in the sample. Your contribution will make a difference. Please take the time now to fill in the survey.

You can access the survey through the link below. Click on it or copy and paste it in to a new web browser.

<https://www.surveymonkey.com/s/Lambproducersdecisions>

All answers will be anonymous and confidential. It should take around 20 minutes to complete and requires only your opinions and a few details about your farm. All respondents have the chance to enter a draw to win one of three \$100 Mitre Ten Mega vouchers. Everyone will be able to access a summary of the results at <http://agricommerce.massey.ac.nz> from late March 2012. I will follow up with a reminder email in two weeks.

Yours sincerely

Jessica Bensemann  
Masters Student  
Massey University  
Palmerston North

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### Information Sheet: Online version

This survey is part of a project analysing the selling decisions of New Zealand lamb producers. The research aims to identify and determine the most important factors influencing selling decisions. You are invited to participate in this research. My supervisors are Nicola Shadbolt, Professor, Farm Management and Daniel Conforte, Senior Lecturer, Agribusiness from Massey University.

Your contact details have been received fromASUREQuality Limited for research purposes. Producers were randomly selected from a list by ASUREQuality based on certain selection criteria. Contacts were required to be sheep producers, located within the Gisborne, Hawkes Bay, Wairarapa, Otago and Southland districts, and farm more than 150 hectares.

The survey covers a range of questions including producer behaviour, attitudes and values. It should take around 20 minutes to complete. Data will remain confidential and be used in aggregate form where no individual response may be identified. Multivariate regression analysis will be carried out to assess the existence of any relationships between factors of interest. Survey responses will be kept downloaded in aggregate form and stored for five years after which point they will be disposed of.

Completion and return of the questionnaire implies consent. You have the right to decline to answer any particular question. If you have any questions please feel free to contact any of the following people involved in the research:

Jessica Bensemann

Agribusiness

IFNHH - PN452

Private Bag 11222

Palmerston North 4442

Phone: 027 365 7288 or (06) 356 9099 extn. 81446

Nicola Shadbolt

Agribusiness

IFNHH - PN452

Private Bag 11222

Palmerston North 4442

Phone: (06) 356 9099 extn. 81412

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz).

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**Postal cover letter and information sheet**

19 September 2011

A Producer

The street

RD10

East Coast 1234

Dear A Producer,

Where are your lambs going to be sold this year? How much will you get for them? How will you decide between the various options on offer?

Right now, at the start of another round of lambing, docking, and weaning, you will be thinking about this. It is vital that others in the supply chain also understand what will influence your decisions.

My name is Jessica Bensemman, and I have chosen this topic for my research as part of a Masters in AgriCommerce at Massey University. This is an independent study, not funded by an external party, but is designed to increase overall understanding within the industry. My supervisors are Nicola Shadbolt, Professor, Farm Management and Daniel Conforte, Senior Lecturer, Agribusiness from Massey University.

While higher prices have taken some of the heat out of the debate, there is still a lot of discussion around the issues of the New Zealand sheep industry. I have a keen interest in the New Zealand meat industry, and want to separate any industry myths from the facts.

I am surveying a sample of producers from the East Coast of the North Island and from the Otago/Southland region. Due to the focus on only two regions it is critical that I get responses from every producer in the sample. Your contribution will make a difference.

The survey should take around 20 minutes to complete and requires only your opinions and a few details about your farm. All respondents have the chance to enter a draw to win one of three \$100 Mitre Ten Mega vouchers. Please read the enclosed information sheet before filling in the survey.

I will send a reminder letter in two weeks. I would appreciate if you could fill in the survey immediately and return it in the pre-paid envelope as soon as possible.

Yours sincerely



Jessica Bensemman

Masters Student

Massey University

**MASSEY UNIVERSITY**

COLLEGE OF SCIENCES

TE WĀHANGA PŪTAIAO

**DRIVERS OF NEW ZEALAND LAMB PRODUCERS SELLING DECISIONS****INFORMATION SHEET**

My name is Jessica Bensemann and this study goes towards completion of a Masters in AgriCommerce at Massey University. This survey is part of a project analysing the selling decisions of New Zealand lamb producers. The research aims to identify and determine the most important factors influencing selling decisions. You are invited to participate in this research. My supervisors are Nicola Shadbolt, Professor, Farm Management and Daniel Conforte, Senior Lecturer, Agribusiness from Massey University.

Your contact details have been received from AsureQuality Limited for research purposes. Producers were randomly selected from a list by AsureQuality based on certain selection criteria. Contacts were required to be sheep producers, located within the Gisborne, Hawkes Bay, Wairarapa, Otago or Southland districts, and farm more than 150 hectares. It is important to get as many responses as possible. Please only fill this in if you finish some prime lambs in a normal farming year.

The survey covers a range of questions including producer behaviour, attitudes and values. It should take around 20 minutes to complete. Once you have finished please put the survey back in the pre-paid envelope addressed to Massey University. If you would prefer to fill the form in online please go to the following web link

<https://www.surveymonkey.com/s/Lambproducersdecisions>

Data will be used only in aggregate form and in a way that no individual response may be identified. Multivariate regression analysis will be carried out to assess the existence of any relationships between factors of interest. Survey responses will be kept downloaded in aggregate form and stored for five years after which point they will be disposed of.

Everyone will be able to access a summary of the results at <http://agricommerce.massey.ac.nz> from late March 2012. Completion and return of the questionnaire implies consent. You have the right to decline to answer any particular question. If you have any questions please feel free to contact any of the following people involved in the research:

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## Appendix B Variables used in survey

Variables were selected following a multistage process. Firstly, a review of previously used variables in the farm management, relationship management and marketing theory established an initial group of wide ranging variables. These variables covered all possible factors that may affect a producers marketing decision. Secondly, interviews were held with producers and processors to unite the initial group of variables with the attributes that make up the current marketing options available to producers. From this process final groups of variables were identified, and are explained below.

### *Strategic orientation*

The strategic orientation of producers was based largely on previous studies that carried out cluster on producers. Constructs were measured by a number of items rated on a 5-point Likert scale, generally in a strongly agree to strongly disagree format. The final survey covered five constructs of:

#### *Market focus*

I am sceptical about the value of the latest market led supply programmes (R)  
 I am actively involved in a producer group that is linked with a special marketing programme  
 I enquire as to where my lamb is being consumed  
 I have made changes to my farming operation to better meet customer requirements  
 I read all the market intelligence I am sent from my meat company  
 I only think about selling my lambs when I have lambs ready to be sold (R)

#### *Production Focus*

Production systems decisions take priority over selling decisions on my farm  
 I can't worry much about marketing, because my main concerns are the animals on the farm  
 I have production targets I am aiming to meet each year

#### *Flexibility*

If an opportunity comes up to make an additional margin I buy stock, even if it isn't part of my normal operations  
 I get a sense of anticipation at the beginning of each season to see what will happen in the market  
 I have made substantial investments on my farm that tie me to a particular supply channel or company (R)  
 If the price is right, I don't care who I sell to

#### *Stability*

I structure my livestock operation to minimise risk  
 There is little room to change my farming operation due to natural production constraints  
 I prefer a fixed price because it means price security  
 I plan for the long term

#### *Costs*

My farming system is focused around lowest cost production  
 I maintain accurate records of revenues and expenses

#### *Innovation*

I am always using the latest technology on my farm

#### *Searching and Selling Behaviour*

The survey determines differences in the searching and selling behaviour of producers. Questions were structured to determine both how extensive the search process was before selling and the different behavioural factors during selling as covered below. Search process questions included sources of information investigated, perceived level of bargaining power, and the extent different options are evaluated each time lambs are sold. Behavioural traits included whether or not the producer is an opinion leader or follower, level of loyalty to a company to supply plan, and whether they are active or passive in their commitment.

#### *Searching extent*

In general, how many different avenues do you consider and evaluate when selling your lambs?

When deciding to sell your lambs, how frequently do you use the following sources of information?

Other producers

Independent Livestock agent

Family members

Meat company staff

Meat company newsletter

Farming magazines

Professional services

Other

#### *Bargaining power*

I feel I have the following amount of influence on lamb sales negotiations.

#### *Active/Passive*

I am tempted to try out new supply plans.

If I say I will send my stock to one company, I will do so; even if it turns out to be better to send them somewhere else on the day.

I recommend my meat company to other producers.

I would sell to a processing plant further away than the local plant, to sell to my company of choice.

#### *Values*

Alongside strategic business orientation and behavioural traits, there appears to be a strong influence of personal values and beliefs that impact on a producer's selling decisions. These have been grouped into the following constructs in the survey.

#### *Governance/company preference*

I will only sell to a producer owned cooperative meat company

When selecting from many companies and options available, if prices were the same, would you say that: I care a lot which one I sell through I don't care which one I sell through

Do you think the various companies and supply plans for lamb available are all very alike or all very different?

#### *Commitment*

It is important to be committed to one meat company

#### *Convenience*

It's easier to let my buyer/agent arrange when and where my livestock are processed

#### *Independence/Autonomy*

I prefer to run the risk of tight access to killing space over committing my livestock to one company for the season

You will always get better prices over a season by being able to play the market

I would be ok joining supply plan that may require me to change how I produce my stock (R)

#### *Quality orientation*

I consistently target premiums for producing to the preferred range of weights and grades

If prices are high, I sell some lambs that may not meet preferred weight and grade ranges (R)

I regularly weigh my lambs or get them in to the yards to monitor when to sell

### **Relationships**

#### **“Buyer” qualities**

##### *Competence*

The buyer understands how my business fits into the bigger picture

##### *Accessible/Approachable*

I feel like I could call at anytime and be listened to

##### *Integrity*

The buyer has broken promises in the past (R)

##### *Communication*

The buyer communicates with me as frequently as I think is necessary

##### *Benevolence*

I sometimes worry that the buyer will not act in my best interests (R)

### **Situation**

##### *Power balance/conflict*

Sometimes I feel the buyer uses their power against me

A high degree of conflict exists between my business and the buyer

##### *Price satisfaction*

The buyer offers me good prices relative to other buyers

### **Joint**

##### *Interdependence*

I depend on my buyer when making selling decisions

My business is important to the buyer

##### *Goal congruence*

My buyer and I share similar values

##### *Trust*

I have a high level of trust in the buyer

*Partnership*

The relationship is mostly a “marriage of convenience” (R)

*Benefits*

I make better sales decisions because of my buying agent

*Demographics and Farm characteristics*

In addition to collected data on producers’ attitudes about marketing decisions, a number of variables were collected to describe the farm and producer characteristics. For ease of answering these were generally ordinal or categorical options. These included:

Age

Years attended tertiary institution

Level of debt servicing as proportion of gross farm income

Farm income from lamb sales

Land class

Farm size in effective hectares

Total stock units

Sheep proportion of total stock units

Lambs sold in previous season

Whether farm owner-operator

Number of people working full time on property

Proportion of off farm income

Years farming experience

## **Appendix C: Survey form**

## New Zealand lamb producers selling decisions Postal

1. My farm is located in the following district

- Gisborne
  Tararua
  Otago  
 Hawkes Bay
  Wairarapa
  Southland

2. My sheep operation can best be described as

- Lamb Breeder-Finisher
  Lamb Breeder
  Lamb Finisher

If you only finish lambs on a Liveweight Gain for meat processors, please answer the following questions as best you can when thinking about the process you go through to choose between companies to work with

If you breed and sell prime lambs, for the following questions, think about the difference between selling channels for your prime lambs.

If you have NOT sold any prime lambs OR finished any lambs for a meat company in the past FIVE years, please STOP the survey here and return the survey in the envelope provided.

3. In the past five years, I have changed the meat company I sell my lambs to

- Never
  Two or three times  
 Once and stayed with new company
  Many times  
 Once and then switched back to first company

4. Which option best describes your behaviour when deciding which meat company to sell your lambs to?

- I use a third party agent to investigate different options  
 I always sell to the same company so don't look at different options  
 I may look at prices of other companies, but normally sell to the same one  
 I compare different companies each time I sell lambs to get the best deal

5. In the last five years, have you sold any lambs under a committed supply arrangement where you specify in advance predicted numbers of lambs to be delivered to one company for the whole season?

- Never - go to question 6
  Twice - go to question 7
  Always - go to question 7  
 Once - go to question 7
  Almost always - go to question 7

## New Zealand lamb producers selling decisions Postal

### Supply plan

6. What are the reasons you prefer not to commit your supply?

Please RANK the top three factors from most to third important. If less than three factors highly important, pick top one or two factors of importance.

Then go to Question 10

	Most important	Second importance	Third importance
Requirements too high	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk of contracts being broken once signed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doesn't fit with my farming operation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too complicated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not offered by my company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Satisfied with current supply plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prefer to have control of selling decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>		
	<input type="text"/>		
	<input type="text"/>		
	<input type="text"/>		
	<input type="text"/>		
	<input type="text"/>		

## New Zealand lamb producers selling decisions Postal

### Committed supply plan details

7. What were the specifications of the commitment arrangement?

Please tick all that apply

- |   |  |
|---|--|
| <input type="checkbox"/> Fixed price per head                             | <input type="checkbox"/> Meet Weight specification                 |
| <input type="checkbox"/> Fixed price per kilogram (LWG or carcase weight) | <input type="checkbox"/> Meet weekly delivery of specified number  |
| <input type="checkbox"/> Minimum price (plus market changes)              | <input type="checkbox"/> Meet monthly delivery of specified number |
| <input type="checkbox"/> Schedule price                                   | <input type="checkbox"/> Meet annual delivery of specified number  |
| <input type="checkbox"/> Schedule price plus premiums/market returns      | <input type="checkbox"/> Feeding requirements                      |
| <input type="checkbox"/> Minimum number delivered                         | <input type="checkbox"/> Breeding requirement                      |
| <input type="checkbox"/> Meet Fat grade specification                     |  |

8. What are the main reasons you commit your supply?

Please RANK the top three factors from most to third important. If less than three factors highly important, pick top one or two factors of importance.

	Most important	Second importance	Third importance
Price certainty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased information and communication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To give my business set targets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To become closer to the consumer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Premiums available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guaranteed minimum price	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For the good of the industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guaranteed kill space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people recommended them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)			

## New Zealand lamb producers selling decisions Postal

9. If you are no longer selling under committed supply why did you stop? Go to the next question if you are still selling under committed supply.

Please RANK the top three factors from most to third important. If less than three factors highly important, pick top one or two factors of importance.

	Most important	Second importance	Third importance
Inadequate returns for effort required	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drought or other adverse weather event	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Didn't suit my farming operation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too difficult to meet requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Divergence between schedule and committed price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Company cancelled commitment programme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preferred different supply plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural conclusion at certain time of year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Changed company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)			



## New Zealand lamb producers selling decisions Postal

### Strategic orientation

10. Please rate the extent you agree or disagree with the following statements

	Strongly disagree		Neither agree nor disagree		Strongly agree
I am sceptical about the value of the latest market led supply programmes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer a fixed price because it means price security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If the price is right, I don't care who I sell to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is little room to change my farming operation due to natural production constraints	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I only think about selling my lambs when I have lambs ready to be sold	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get a sense of anticipation at the beginning of each season to see what will happen in the market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't worry much about marketing, because my main concerns are the animals on the farm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I read all the market intelligence I am sent from my meat company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. To what extent do you orientate your farm business operation towards the following statements

	No extent		Moderate extent		High extent
I always use the latest technology on my farm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enquire as to where my lamb is being consumed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have production targets I am aiming to meet each year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan for the long term	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production systems decisions take priority over selling decisions on my farm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If an opportunity comes up to make an additional margin I buy stock, even if it isn't part of my normal operations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am actively involved in a producer group that is linked to a particular supermarket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have made substantial investments on my farm that tie me to a particular supply channel or company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My farming system is focused around lowest cost production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I maintain accurate records of revenues and expenses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I structure my livestock operation to minimise risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have made changes to my farming operation to better meet customer requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## New Zealand lamb producers selling decisions Postal

### Searching and selling behaviour

12. In general, how many different avenues do you consider and evaluate when selling your lambs?

- One
- Two
- Three
- Four
- More than four

13. When deciding to sell your lambs, how frequently do you use the following sources of information?

	Never	Rarely	Sometimes	Often	Always
Other farmers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Independent livestock agent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat company staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Farming magazines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat company newsletters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional services e.g. Agrifax, farm consultants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)	<input type="text"/>				

14. I feel I have the following amount of influence on lamb sales negotiations

- Always accept price offered
- Little bargaining power on price at some times
- Little bargaining power on price all the time
- Moderate bargaining power on price all the time
- Strong bargaining power on price all the time

15. In discussions with fellow farmers

	Not used as a source of advice	Often used as a source of advice
Are you	<input type="checkbox"/>	<input type="checkbox"/>

## New Zealand lamb producers selling decisions Postal

16. Please rate the extent you agree or disagree with the following statements

	Strongly disagree		Neither agree nor disagree		Strongly agree
I am tempted to try out new supply plan options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I say I will send my stock to one company, I will do so; even if it turns out to be better to send them somewhere else on the day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I recommend my meat company to other farmers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would sell to a processing plant further away than the local plant, to sell to my company of choice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Please rate the extent you agree or disagree with the following statements

	Strongly disagree		Neither agree nor disagree		Strongly agree
You will always get better prices over a season by being able to play the market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to run the risk of tight access to killing space rather than commit my livestock to one company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use information from my previous killing sheets to influence decisions about my next draft of lambs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be ok joining a supply plan that requires me to change how I produce my stock	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I regularly weigh my lambs or get them in to the yards to monitor when to sell them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consistently target premiums for producing to the preferred range of weights and grades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If prices are high, I sell some lambs that may not meet preferred weight and grade ranges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to be committed to one meat company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's easier to let my buyer/agent arrange when and where my livestock are processed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will only sell to a farmer owned cooperative meat company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. If you were to select from several companies and supply plans available,

	I don't care who I sell to				I care a lot who I sell to
and they offered the same price, would you say that	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Do you think

	Are all alike				Are all different
The various companies and supply plans for lamb available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Do you think

Prices offered by different meat companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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## New Zealand lamb producers selling decisions Postal

### Changes to behaviour

21. I would commit and deliver all of my stock to one company if I were paid a premium per head of lamb for commitment and delivery of

	Definitely not	Unlikely	Maybe	Likely	Definitely
\$0.00	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$0.50	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$1.00	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$3.00	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. For a one-off non-committed sale, if you were offered a price per kilogram by your current buyer, would you consider switching if another buyer offered you an extra

	Definitely not	Unlikely	Maybe	Likely	Definitely
10 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
100 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. If you had committed all your stock for one season, would you consider breaking that commitment for a one-off if another buyer offered you an extra

	Definitely not	Unlikely	Maybe	Likely	Definitely
10 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
100 c/kg	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Please rate the extent you agree or disagree with the following statements

	Strongly disagree	Neither agree nor disagree	Strongly agree
It makes a difference to my returns if I try to reach the higher paying weights and grades ranges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would be a big thing for me to end the relationship with my agent/buyer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. Please rate the extent you agree or disagree with the following statements

	Definitely not	Unlikely	Maybe	Likely	Definitely
If my agent/buyer shifted companies I would go with them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If my agent/buyer recommended a new supply plan for my business, I would take it up	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## New Zealand lamb producers selling decisions Postal

26. When comparing one company to others, have there been any factors that have led you to change or consider changing meat companies?

	No consideration		Moderate consideration		High consideration
Staff Capability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level of partnership with suppliers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Level of innovative activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transparency of operations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial soundness of the company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vision for future and leadership in the industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fair treatment of suppliers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Company in-market behaviour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. How important do you consider the following services in your choice of meat company?

	Not necessary		Neutral		Critical
Market information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The most up-to-date technology to provide feedback on my performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale and purchase of store stock	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Producer groups linked to supermarket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finance plans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Certainty of processing space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A stock drafter that can pick which stock should go to get best price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. I see my main relationship for lamb sales as with

- A meat company - go to question 31
- A meat company livestock representative - go to question 29
- A third party stock agent - go to question 29

## New Zealand lamb producers selling decisions Postal

### Buyer/agent Relationship

29. ONLY ANSWER THIS QUESTION IF YOU TICKED EITHER A MEAT COMPANY REPRESENTATIVE OR A THIRD PARTY STOCK AGENT IN QUESTION 28.

Please answer the following questions based on your feelings towards the buyer relationship you indicated in the previous question

	Low quality	1	2	3	4	5	6	7	8	9	High quality
Compared to relationships I have with other people involved with my business I would rate this relationship out of 10		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

30. Please answer the following questions based on your feelings towards the buyer relationship you indicated above.

Then go to Question 33.

	Strongly disagree	agree nor disagree	Strongly agree
Sometimes I feel the buyer uses their power against me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The buyer understands how my business fits into the bigger picture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The buyer offers me good prices relative to other buyers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I depend on my buyer when making selling decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My business is important to the buyer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The buyer has broken promises in the past	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My buyer and I share similar values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A high degree of conflict exists between my business and the buyer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I could call at anytime and be listened to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The relationship is mostly a "marriage of convenience"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make better sales decisions because of my buyer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a high level of trust in the buyer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The buyer communicates with me as frequently as I think is necessary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes worry that the buyer will not act in my best interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## New Zealand lamb producers selling decisions Postal

### Meat company Relationship

31. ONLY ANSWER THIS QUESTION IF YOU TICKED MEAT COMPANY AS YOUR MAIN RELATIONSHIP IN QUESTION 28.

Please answer the following questions based on your feelings towards the meat company relationship you indicated in the previous question

	Low	2	3	4	5	6	7	8	9	High
	quality									quality
	1									10
Compared to relationships I have with other people involved with my business I would rate this relationship out of 10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

32. Please answer the following questions relating to your relationship with your meat company

	Strongly disagree		Neither agree nor disagree		Strongly agree
The company has broken promises in the past	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The company communicates with me as frequently as I think is necessary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The company understands how my business fits into the bigger picture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A high degree of conflict exists between my business and the company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The relationship is mostly a "marriage of convenience"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I depend on my company when making selling decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I feel the company uses their power against me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes worry that the company will not act in my best interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a high level of trust in the company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My company and I share similar values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like I could call at anytime and be listened to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My business is important to the company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The company offers me good prices relative to other companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make better sales decisions because of my company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## New Zealand lamb producers selling decisions Postal

### Demographics

33. My entire farming operation is currently in the following mode of business cycle

- Entry
- Consolidation
- Growth/Expansion
- Exit

34. What is your age?

- |                                |                                |
|--------------------------------|--------------------------------|
| <input type="checkbox"/> 20-29 | <input type="checkbox"/> 50-59 |
| <input type="checkbox"/> 30-39 | <input type="checkbox"/> 60-69 |
| <input type="checkbox"/> 40-49 | <input type="checkbox"/> 70+   |

35. For how many years have you attended university or tertiary institutions?

- |                             |                             |
|-----------------------------|-----------------------------|
| <input type="checkbox"/> <1 | <input type="checkbox"/> 3  |
| <input type="checkbox"/> 1  | <input type="checkbox"/> 4  |
| <input type="checkbox"/> 2  | <input type="checkbox"/> 4+ |

36. What is your approximate debt servicing (interest and principal payments) as a proportion of gross farm income for the 2009/10 financial year?

- |                                 |                                 |
|---------------------------------|---------------------------------|
| <input type="checkbox"/> 0-9%   | <input type="checkbox"/> 30-39% |
| <input type="checkbox"/> 10-19% | <input type="checkbox"/> 40+%   |
| <input type="checkbox"/> 20-29% |                                 |

37. Approximately what proportion of your gross farm income comes from prime and store lamb sales?

- |                                 |                                  |
|---------------------------------|----------------------------------|
| <input type="checkbox"/> 0-20%  | <input type="checkbox"/> 60-80%  |
| <input type="checkbox"/> 20-40% | <input type="checkbox"/> 80-100% |
| <input type="checkbox"/> 40-60% |                                  |

38. How many years in total have you been farming?

- |                                |                                |
|--------------------------------|--------------------------------|
| <input type="checkbox"/> 0-5   | <input type="checkbox"/> 20-30 |
| <input type="checkbox"/> 5-10  | <input type="checkbox"/> 30+   |
| <input type="checkbox"/> 10-20 |                                |



## New Zealand lamb producers selling decisions Postal

### Demographics

39. Which land class best describes your farm type?

- |   |   |
|---|---|
| <input type="checkbox"/> North Island Hard Hill country   | <input type="checkbox"/> South Island High country        |
| <input type="checkbox"/> North Island Breeding Finishing  | <input type="checkbox"/> South Island Breeding Finishing  |
| <input type="checkbox"/> North Island Intensive Finishing | <input type="checkbox"/> South Island Intensive Finishing |

40. What is your farm size in effective hectares?

- |                                |                                  |                               |
|--------------------------------|----------------------------------|-------------------------------|
| <input type="checkbox"/> 0-250 | <input type="checkbox"/> 250-500 | <input type="checkbox"/> 500+ |
|--------------------------------|----------------------------------|-------------------------------|

41. What are your total stock units?

- |                                  |                                    |                                |
|----------------------------------|------------------------------------|--------------------------------|
| <input type="checkbox"/> 0-2,500 | <input type="checkbox"/> 2500-5000 | <input type="checkbox"/> 5000+ |
|----------------------------------|------------------------------------|--------------------------------|

42. What percentage of your total stock units are sheep?

- |                                 |                                  |
|---------------------------------|----------------------------------|
| <input type="checkbox"/> 0-20%  | <input type="checkbox"/> 60-80%  |
| <input type="checkbox"/> 20-40% | <input type="checkbox"/> 80-100% |
| <input type="checkbox"/> 40-60% |                                  |

43. How many PRIME lambs in total will you sell or fatten (finished, contracted and trading lambs) between 1 October 2010 and 30 September 2011?

- |                                    |                                    |
|------------------------------------|------------------------------------|
| <input type="checkbox"/> 0-999     | <input type="checkbox"/> 2000-4999 |
| <input type="checkbox"/> 1000-1999 | <input type="checkbox"/> 5000+     |

44. Are you a farm owner-operator?

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

45. Number of people working full time on your farm (including yourself)?

- |                              |                              |
|------------------------------|------------------------------|
| <input type="checkbox"/> 1   | <input type="checkbox"/> 2-4 |
| <input type="checkbox"/> 1-2 | <input type="checkbox"/> 4+  |

46. What proportion of your total income comes from non-farm activities?

- |                                 |                                 |
|---------------------------------|---------------------------------|
| <input type="checkbox"/> 0-10%  | <input type="checkbox"/> 40-60% |
| <input type="checkbox"/> 10-20% | <input type="checkbox"/> 60+%   |
| <input type="checkbox"/> 20-40  |                                 |

## Appendix D Chi-Square Test Results

**Table 43: Always and Sometimes Committers Chi-Square test**

	Info	Consumer	Space	Premiums	Industry	Targets	Price cert	Min price	Other	Other
	Observed									
1	12	2	212	76	0	20	14	73	15	55
2	33	14	84	131	3	38	34	51	24	39
3	56	19	39	46	7	64	51	35	22	17
	Expected									
1	38	13	125	94	4	45	37	59	23	41
2	35	12	117	89	4	43	35	56	21	39
3	28	10	93	70	3	34	27	44	17	31
	Residuals									
	33	31	36	35	34	30	28	29	32	37
1	-4.2	-3.1	7.8	-1.9	-1.9	-3.8	-3.8	1.8	-1.6	2.1
2	-0.4	0.5	-3.1	4.5	-0.3	-0.7	-0.1	-0.6	0.6	0.0
3	5.3	3.0	-5.6	-2.9	2.5	5.2	4.5	-1.4	1.2	-2.5
	Test Statistics									
1	17.4	9.3	<b>61.0</b>	3.5	3.7	14.2	14.2	3.2	2.6	4.5
2	0.2	0.2	9.5	<b>20.1</b>	0.1	0.5	0.0	0.4	0.3	0.0
3	28.1	8.9	<b>31.1</b>	8.2	6.5	27.1	20.3	1.8	1.5	6.1

**Table 44: High Committers Chi-square test**

	Info	Consumer	Space	Premiums	Industry	Targets	Price cert	Min price	Other
	Observed								
1	4	0	58	20	6	7	23	3	8
2	10	6	29	29	13	14	16	6	2
3	23	7	10	20	12	15	10	6	3
	Expected								
1	13	5	35	25	11	13	18	5	5
2	13	5	34	24	11	13	17	5	5
3	11	4	29	20	9	11	14	4	4
	Residuals								
1	-2.5	-2.2	3.9	-1.0	-1.5	-1.6	1.3	-1.0	1.5
2	-0.8	0.7	-0.8	1.0	0.7	0.4	-0.2	0.3	-1.2
3	3.7	1.6	-3.5	-0.1	1.0	1.4	-1.2	0.8	-0.4
	Test statistic								
1	6.5	4.7	<b>15.5</b>	0.9	2.3	2.7	1.7	1.0	2.4
2	0.6	0.5	0.7	1.1	0.5	0.2	0.1	0.1	<b>1.4</b>
3	<b>13.5</b>	2.6	12.1	0.0	0.9	1.8	1.4	0.6	0.2

Table 45: Low Committers Chi-Square test

	Info	Space	Premiums	Industry	Targets	Price cert	Other
	Observed						
1	4	115	30	12	4	11	12
2	16	31	67	18	10	19	12
3	23	18	10	36	26	13	3
	Expected						
1	16	63	41	25	15	16	10
2	15	58	38	23	14	15	10
3	11	43	28	17	11	11	7
	Residuals						
1	-3.1	6.6	-1.7	-2.6	-2.9	-1.4	0.5
2	0.2	-3.5	4.8	-1.1	-1.1	1.0	0.8
3	3.5	-3.8	-3.4	4.5	4.8	0.5	-1.5
	Test statistics						
1	9.4	<b>43.1</b>	3.0	7.0	8.4	1.8	0.2
2	0.0	12.5	<b>22.6</b>	1.2	1.2	0.9	0.6
3	12.0	14.7	11.7	19.9	<b>22.7</b>	0.2	2.3

Table 46: Sometimes Commit Chi-Square test

	Industry	Premiums	Min price	Price cert	Target	Space	Info
	Observed						
1	1	26	11	39	3	35	4
2	7	33	14	16	9	24	7
3	15	16	13	11	10	11	10
	Expected						
1	8	28	14	24	8	26	8
2	8	26	13	23	8	24	7
3	7	21	11	19	6	20	6
	Residuals						
1	-2.6	-0.3	-0.8	3.0	-1.8	1.8	-1.3
2	-0.3	1.4	0.2	-1.4	0.5	-0.1	-0.1
3	3.3	-1.2	0.7	-1.8	1.5	-2.0	1.6
	Test statistics						
1	6.6	0.1	0.6	<b>8.9</b>	3.4	3.3	2.0
2	0.1	1.9	0.0	<b>2.1</b>	0.2	0.0	0.0
3	<b>10.9</b>	1.3	0.4	3.2	2.7	4.0	3.2

Table 47: Non Committers Chi-square test

	Not offered	Satisfied	Complictd	Control	Break	Requiremt	Doesn't fit	Other
	Observed							
<b>1</b>	9	38	7	119	15	10	57	25
<b>2</b>	14	55	13	54	30	13	53	13
<b>3</b>	5	32	18	19	35	25	31	17
	Expected							
<b>1</b>	11	50	15	76	32	19	56	22
<b>2</b>	10	43	13	67	28	17	49	19
<b>3</b>	7	32	10	49	21	12	36	14
	Residuals							
<b>1</b>	-0.6	-1.6	-2.1	4.9	-3.0	-2.1	0.2	0.7
<b>2</b>	1.4	1.8	0.0	-1.5	0.4	-0.9	0.6	-1.4
<b>3</b>	-0.8	0.0	2.6	-4.3	3.2	3.6	-0.9	0.8
	Test statistics							
<b>1</b>	0.4	2.7	4.3	<b>24.3</b>	8.8	4.3	0.0	0.5
<b>2</b>	1.9	<b>3.2</b>	0.0	2.4	0.2	0.8	0.4	1.9
<b>3</b>	0.7	0.0	6.9	<b>18.7</b>	10.1	12.9	0.8	0.6

Table 48: Switchers Chi-square test

	Not offered	Satisfied	Complictd	Control	Break	Requiremt	Doesn't fit	Other
	Observed							
<b>1</b>	3	14	4	63	8	6	25	13
<b>2</b>	6	17	7	24	18	8	36	6
<b>3</b>	1	19	7	12	18	14	12	10
	Expected							
<b>1</b>	4	19	7	38	17	11	28	11
<b>2</b>	3	17	6	34	15	10	25	10
<b>3</b>	3	13	5	26	12	7	19	8
	Residuals							
<b>1</b>	-0.4	-1.2	-1.1	4.0	-2.2	-1.5	-0.6	0.5
<b>2</b>	1.4	-0.1	0.3	-1.8	0.7	-0.6	2.1	-1.3
<b>3</b>	-1.0	1.6	1.0	-2.8	1.9	2.4	-1.7	0.8
	Test statistic							
<b>1</b>	0.2	1.5	1.3	<b>15.8</b>	4.8	2.2	0.4	0.3
<b>2</b>	1.8	0.0	0.1	3.1	0.5	0.3	<b>4.5</b>	1.7
<b>3</b>	1.0	2.5	1.0	<b>7.7</b>	3.4	5.8	2.8	0.7

**Table 49: Non Switchers Chi-square test**

	Not offered	Satisfied	Complictd	Control	Break	Requiremt	Doesn't fit	Other
	Observed							
<b>1</b>	6	24	3	53	6	4	30	12
<b>2</b>	7	37	6	29	11	5	16	7
<b>3</b>	4	13	11	7	17	10	19	6
	Expected							
<b>1</b>	7	30	8	36	14	8	26	10
<b>2</b>	6	25	7	31	12	7	22	9
<b>3</b>	4	19	5	23	9	5	16	6
	Residuals							
<b>1</b>	-0.3	-1.1	-1.8	2.9	-2.1	-1.3	0.8	0.6
<b>2</b>	0.5	2.3	-0.3	-0.3	-0.2	-0.6	-1.3	-0.5
<b>3</b>	-0.2	-1.3	2.6	-3.3	2.9	2.4	0.6	-0.1
	Test statistic							
<b>1</b>	0.1	1.1	3.2	<b>8.3</b>	4.3	1.7	0.6	0.4
<b>2</b>	0.2	<b>5.2</b>	0.1	0.1	0.0	0.4	1.8	0.3
<b>3</b>	0.0	1.8	6.9	<b>10.7</b>	8.1	5.6	0.4	0.0