Analysing beef supply chain strategy in Australia, the United States and the United Kingdom

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Abstract
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Keywords
australia, united, states, supply, kingdom, chain, beef, analysing, strategy

Disciplines
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Abstract

The purpose of this paper is to apply recently developed methods to compare and contrast the operation of beef supply chains in Australia, the US and the UK. This comparison reveals aspects of the supply chains that are a consequence of their respective contexts, including resource endowments in the various countries. The market structure is a critical factor in determining optimal supply chain configurations. As a consequence, a lean approach to supply chain management is more likely to succeed in Australia than in the other two countries.

Keywords: supply chains, beef, inter-country comparison, optimum
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Introduction

This paper shows how to analyse supply chains in an industry where little previous analysis has been performed. The underlying purpose of the research project that forms the background of the paper is to improve the performance of supply chains in the Australian beef industry. Given that the analysis of supply chains in this industry is at an embryonic stage, a broad perspective was developed. This used a comparative approach that examined together the beef industries in Australia, the United States and the United Kingdom. By reviewing the market structure of the industry, the regulatory framework, the main sources of consumer confidence, and value attributes for retailers, processors and producers in the three jurisdictions, a deeper understanding of the Australian industry was achieved. This revealed supply chain strategies that firms in the industry could implement to improve performance.

Method

In a seminal paper, Cox and Chicksand (2008) emphasised the need to account for specific industry characteristics such as demand and supply, and industry structure when assessing optimal supply chain configurations. Their approach provided the foundation of the method of the current paper. In the research reported here, the dominant forms of supply chains of the beef industries Australia, the US and the UK were analysed in various ways to obtain insights into the operation of the respective supply chains. For example the quantities of live cattle and beef flowing through each channel can be shown by altering in figures representing the chains the thickness of the channels. The extent of vertical integration can be shown by appropriate colour coding of segments of the figures. Moreover at key points in the supply chain figures, quality assurance processes can be indicated.

The process of augmenting the supply chain figures led to four components of comparison between the respective chains: market structure of the industry, the regulatory framework, main source of consumer confidence, and value attributes for retailers, processors and producers.

Issues Revealed by Comparing these Chains

Differences in natural resource endowments have impacted on the development of the beef industries of the three countries. Australian cattle producers use both native pastures and improved or sown pastures to produce mostly grass-fed beef. In the UK, cattle producers also generally use a grass diet. In contrast, the US cattle producers tend to use feed grains to finish cattle as the US generally has plentiful supplies of grain. Feedlots are a characteristic of US cattle production and are becoming more common in Australia, whereas in the UK, feedlots are the rare exception.
Table 1 shows a comparison between Australia, the US and the UK beef supply chain management. As mentioned above, there are four components of comparison between beef supply chains: market structure of the industry, the regulatory framework, sources of consumer confidence, and value attributes for retailers, processors and producers. They result partly from natural resource endowments, but also through historical development of government regulation and strategic evolution of the industry.

**Table 1 Comparison between the US, UK and Australia beef supply chain management**

<table>
<thead>
<tr>
<th>Item</th>
<th>US</th>
<th>UK</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Industry structure/concentration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Producer</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>- Feedlot</td>
<td>Very high</td>
<td>N/A</td>
<td>Medium</td>
</tr>
<tr>
<td>- Processor</td>
<td>Very high</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>- Retailer</td>
<td>Low</td>
<td>Very high</td>
<td>Medium/High</td>
</tr>
<tr>
<td></td>
<td><strong>Property Rights</strong></td>
<td>Individual</td>
<td>Retailer</td>
</tr>
<tr>
<td></td>
<td><strong>Regulatory framework</strong></td>
<td>Public and private</td>
<td>Public and private</td>
</tr>
<tr>
<td></td>
<td><strong>Source of consumer confidence</strong></td>
<td>Government</td>
<td>Retailers</td>
</tr>
<tr>
<td></td>
<td><strong>Value attributes (order winner or qualifier) for retailer/supermarket, processors and producers</strong></td>
<td>Focus on own brand, increase customer loyalty, increase throughput/profit, stable pricing/price floor and niche positioning</td>
<td>Increase customer loyalty, protect retail brand, maintain supply and consistency of product, access to market, plan and forecast accuracy, stable pricing and market orientation</td>
</tr>
</tbody>
</table>

Source: Hornibrook, Fearne and Boland (2001)

**Market Structure**

Australia, the US and the UK have a high concentration at the processor level, as processors control a high proportion of kill share. In the UK, retailers at the national
level have a very high concentration compared with the US and Australia. The main reason for this is that the number of mergers and acquisitions in the UK has been increasing at the retail level.

Moving back to the producer level, Australia has medium concentration in farms and feedlots. The UK has few feedlots in its beef supply chain market structure, and the US has very high concentration at the feedlot level, but low concentration with producers who supply live animals to the feedlots.

Cox and Chicksand (2008) analysed beef supply chains in the UK and concluded that the industry structure was conducive to a lean approach in the relationship between retailers and processors, but not upstream of processors. This was because the retail sector was highly concentrated and had considerable market power with the demise of the UK’s export markets following the bovine spongiform encephalopathy (BSE) outbreak of the late 1980s. Moreover the imbalance between demand and supply for particular cuts of beef results in highly unstable demand for products leaving UK farms. In this situation it is difficult for the necessary trust to be established between farmers and processors to enable the development of a lean system. They are more likely to behave opportunistically against each other.

The beef industry structure in the US is different from the UK, with power concentrated with processors rather than retailers. There are some integrated supply chains in the US, with branding of beef products, so there is some opportunity for lean approaches. However, for similar reasons to the UK, this lean system is unlikely to proceed upstream beyond feedlots. The cow-calf producers supplying store cattle to feedlots are too small and variable in their production.

In contrast to both the UK and US, Australia has high concentration at retail and processor levels and medium concentration in beef production (although there are also many marginal producers). In addition, the vibrant export market for Australian beef has the effect of reducing some of the market power of domestic supermarkets. This structure is more conducive to alliances and vertical integration being established along beef supply chains, and also makes a lean approach from production to retail more feasible.
The Regulatory Framework and Consumer Confidence

All three countries have public and private aspects of regulation of beef supply chains. In all three, governments are involved directly in the market for red meat products. Australia has regulation of the beef industry through the Livestock Production Assurance (LPA) Program; animal welfare legislation (State and Federal); and the Australian Quarantine and Inspection Service (AQIS). The US has the 1996 Final Rule on Pathogen Reduction and Hazard Analysis Critical Control Points (MEGAREG); the 1938 Federal Food, Drug and Cosmetic Act (FFDCA); the Federal Meat Inspection Act (FMIA); the 1996 Food Quality Protection Act (FQPA); and the Public Health Service Act. The UK has direct regulation of the beef industry through the 1990 Food Safety Act.

Given the different scope of public regulation, private regulation commences from a different position in each country. It includes self-regulation and certification by other parties, for example the International Organisation for Standardisation (ISO), HACCP, Farm Assured British Beef and Lamb, Scottish Quality Beef and Lamb Association, Certified Angus Beef, Nebraska Corn-Fed Beef and others.

It is instructive to examine the BSE crisis to demonstrate the differences in the overall regulatory frameworks of the three countries. Australia has had strict animal feeding regulations since the mid-1960s that enabled it to avoid a BSE outbreak. In the UK, the epicenter of the BSE crisis, government regulation was applied to slaughter many animals both infected and not as a precaution against spread of the disease. However, according to Beck et al. (2007), this regulation was not as strict as in Germany, which suffered a minimal outbreak of BSE in comparison to the UK.

If regulation in the UK is considered only moderate, in the US there must be even bigger question marks. While in Germany and the UK up to 25% of the beef herd is tested for BSE, the US has BSE testing at a minimal level (0.1% of slaughtered cattle), despite having their own BSE outbreak (Weiss, Thurbon and Mathews, 2006).

In summary, the key lessons learned from this are to have a better understanding of the aspects of regulation of beef supply chains before any empirical studies on quality assurance (QA) and aspects of regulations models are developed. Additionally, the fundamental objective of the public QA schemes is to guarantee to consumers that the supply of produce has all attributes that the schemes seeks to affect, for instance, improved animal welfare, improved traceability, elimination of objectionable feedstuff and public health. Judging the effectiveness of private QA across the three jurisdictions can only proceed after the impact of public regulation has been assessed.

Sources of Consumer Confidence

Consumer confidence arises for both real and perceived reasons. As shown above, there has been limited public regulation in the US in relation to BSE. Despite this, or possible because of this image that there is no problem, consumer surveys in the US show that the public has trust in the USDA (Loureiro and Umberger, 2007) and the FDA.
In the UK, consumers tend to put their trust in the major supermarkets (Christensena et al., 2003; Frewer et al., 1996) and the resultant economic benefits derived from the success of own-brand beef products is tempered by the increase in the possible penalties imposed by both consumers and regulators in the event of product failure, as the consequences are not just confined to the product category but affect the overall retail brand.

In Australia this consumer confidence role lies with processors, though government regulation restricts the operations of processors in a manner that consumers usually fail to recognise.

**Value Attributes**

Australia, the US and the UK have similar value attributes for beef retailers/wholesalers, as shown in Table 1. They are concentrating on brand, customer loyalty, stable pricing and profitability. However, Australia is also concentrating on food safety and quality. These value attributes are partly a desire of the individual firms in the three countries to position themselves strategically by, for example, developing specific product attributes, and partly a consequence of the industry structure, regulation and sources of consumer confidence discussed above. The identification of such different value attributes in Australia, the US and the UK, would suggest that beef enterprises may design operations differently in each country to support those value attributes.

**Conclusions**

By applying the methods outlined by Cox and Chicksand (2008), an analysis was completed to compare the supply chains for beef in Australia, the US and the UK. The examination of industry structure, the regulatory framework, sources of consumer confidence and value attributes in each country reveals the type of supply chain management approach which is likely to be successful in each jurisdiction. For example a lean approach is more likely to be successful in Australia than in the other two countries.

Another contribution of the work is to reveal that further research would be useful in the beef industry in Australia to build on what are essentially preliminary results. Future supply chain analysis should be able to identify key nodes for attention when attempting to improve quality, efficiency and consumer satisfaction.

**References**


