

FOUR CASES ON MARKET ORIENTATION OF VALUE CHAINS IN AGRIBUSINESS AND FISHERIES

Klaus G. Grunert
Lisbeth Fruensgaard Jeppesen
Kristina Risom Jespersen
Anne-Mette Sonne
Aarhus School of Business

Kåre Hansen
Torbjørn Trondsen
University of Tromsø, Norway

James A. Young
University of Stirling, Scotland

Working paper no 83-2004
ISSN 0907 2101
February 2004

PREFACE	5
INTRODUCTION	5
METHODOLOGY	7
BACON FROM DENMARK	9
BACKGROUND	9
CHARACTERISTICS OF RAW MATERIAL	12
CHARACTERISTICS OF THE VALUE CHAIN	13
<i>Configuration</i>	13
<i>Actors</i>	14
<i>Power dependence</i>	18
CHARACTERISTICS OF END USERS	19
REGULATORY ENVIRONMENT	20
DEGREE OF MARKET ORIENTATION	20
CONCLUSIONS	21
FROZEN COD FROM NORWAY	23
BACKGROUND	23
CHARACTERISTICS AND SUPPLY OF THE RAW MATERIAL	23
CHARACTERISTICS OF THE VALUE CHAIN	27
<i>Configuration</i>	27
<i>Actors</i>	28
CHARACTERISTICS OF END USERS	33
REGULATORY ENVIRONMENT	34
<i>Resource management</i>	34
<i>Value chain management</i>	35
<i>International institutions</i>	37
RELATIONS AND POWER DEPENDENCE	37
<i>Between fishermen and the processing industry</i>	37
<i>Between the processing industry and retailer/caterers</i>	38
DEGREE OF MARKET ORIENTATION	39
CONCLUSIONS	42
ORANGE JUICE FROM BRAZIL	44
BACKGROUND	44
CHARACTERISTICS OF RAW MATERIAL	46
CHARACTERISTICS OF THE VALUE CHAIN	47
<i>Configuration</i>	47
<i>Actors</i>	48
<i>Relations between chain members</i>	50
<i>Power dependence</i>	53
CHARACTERISTICS OF END USERS	54
REGULATORY ENVIRONMENT	55

<i>Regulatory environment in Brazil</i>	55
<i>Regulatory environment in Europe</i>	55
DEGREE OF MARKET ORIENTATION	56
CONCLUSIONS.....	57
LAMB MEAT FROM NEW ZEALAND.....	59
BACKGROUND	59
CHARACTERISTICS OF RAW MATERIAL	61
CHARACTERISTICS OF THE VALUE CHAIN.....	62
<i>Configuration</i>	62
<i>Actors</i>	62
<i>Relations</i>	68
<i>Power dependence</i>	69
CHARACTERISTICS OF END USERS	70
REGULATORY ENVIRONMENT	70
DEGREE OF MARKET ORIENTATION	70
CONCLUSIONS.....	71
DISCUSSION.....	73
REFERENCES.....	79
APPENDIX 1: INTERVIEW GUIDE – GENERAL OUTLINE.....	81
APPENDIX 2: INFORMANTS.....	83

PREFACE

This working paper presents results from the project ‘Supra-company level determinants of degree of market orientation of value chains in agriculture and fisheries’, which is carried out in cooperation between MAPP – Centre for Research on Customer Relations in the Food Sector, Aarhus School of Business, Denmark, the Norwegian College of Fisheries Science, University of Tromsø, Norway, and the Department of Marketing, University of Stirling, Scotland. It has benefited from grants from the Danish Social Science Research Council and from the Norwegian Research Council. The present working paper is the ‘long’ version of the empirical work in the first major phase of the project, where we study four examples of food value chains to get insight into their degree of market orientation and possible determinants. The insights gained here have been used in subsequent empirical work that is currently underway.

INTRODUCTION

The purpose of this paper is to present the results from four case studies on market orientation of value chains in agribusiness and fisheries.

Market orientation is commonly defined as the extent to which an actor in the marketplace uses knowledge about the market, especially about customers, as a basis for decision-making on what to produce, how to produce it, and how to market it (Jaworski & Kohli, 1993, 1996; Kohli & Jaworski, 1990). Market orientation is regarded as a major prerequisite for being able to create superior customer value, which in turn is regarded as a major determinant of competitive advantage.

It is widely acknowledged that food production, i.e. agriculture and fisheries and the subsequent processing links in the food value chain, need more market orientation (Grunert, Hartvig Larsen, Madsen & Baadsgaard, 1996). Agriculture and fisheries have a long tradition for being commodity-oriented, with an emphasis on efficiency, high volume, constant quality and economies of scale. However, competition on international food markets is increasingly moving towards products with higher degrees of value added and higher degrees of differentiation. The more products become differentiated, and the higher the degree of processing, the more important it becomes that production-related competencies become supplemented by market-related competencies, since products will be tailored more specifically to certain markets or customer segments, and the risk of developing products which will not gain market acceptance increases.

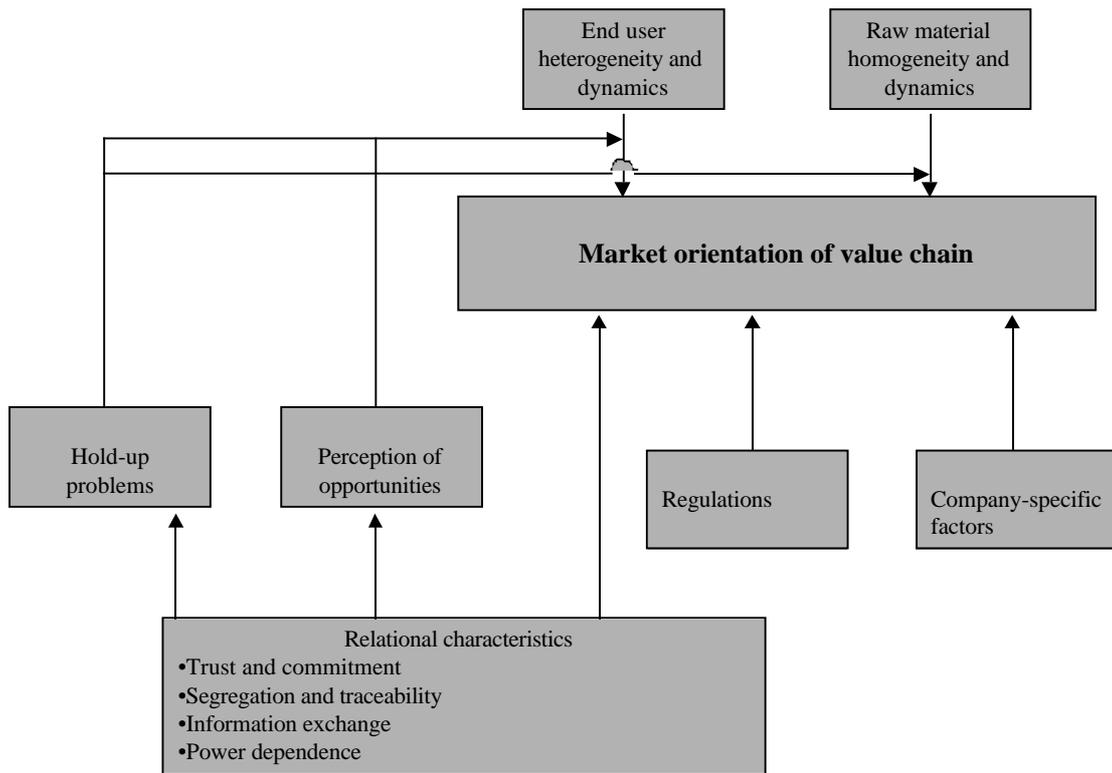
Overall value creation in the food sector occurs in chains consisting of primary production, various levels of processing and distribution, supplemented by actors dealing with logistics, ingredients and equipment. To an increasing extent these chains are competing on international markets, and some national food sectors actively promote more chain integration for this reason. Since the combined activities of the value chain determine the

extent and kind of value created in the eyes of the end user, we have earlier suggested extending the concept of market orientation from company level to the level of the overall value chain (Grunert, Jeppesen, Risom, Sonne, Hansen & Trondsen, 2002). Extending the definition of Kohli and Jaworski (1990), we have defined the degree of market orientation of a value chain as the extent to which chain members generate intelligence about current and potential end users served by the chain, the extent to which they disseminate this intelligence across the chain, and the extent to which the chain responds to it. A chain can differ in the extent to which chain members perform such market-oriented activities, but it can also differ in how such activities are distributed across the chain members. We say that a chain has a high level of market orientation when it has a high level of market orientation distributed across the actors of the chain, as compared to a situation where only one or two actors in the chain (typically downstream) perform market-oriented activities.

We have also proposed a framework which integrates a number of potential determinants of the degree of market orientation of a value chain. This framework is shown in figure 1. Based on a review of the literature and theoretical reasoning, the following factors were proposed (for details, the reader is referred to Grunert et al., 2002):

- The determinants of the degree of market orientation commonly discussed at the organisational level (structural and attitudinal variables) are retained.
- Characteristics of the end users served: We expect end user heterogeneity and dynamism to be a major determinant of market orientation of value chains, because it creates the potential for economic gains by being more market-oriented.
- Barriers to the exploitation of the opportunities created by end user heterogeneity: Such opportunities may not be believed to be exploitable in a profitable way, or their exploitation may not occur due to hold-up problems, i.e. actors in the chain may be reluctant to invest in the development of products which commit them to certain customers or user groups.
- Characteristics of the supply market: The more heterogeneous and dynamic the supply of raw material, the more we expect market oriented activities also to take place upstream in the value chain. The reason for this is that heterogeneous raw material either needs to be matched with heterogeneous end user needs, for example by sorting mechanisms, or the heterogeneity needs to be reduced based on end user preferences.
- Characteristics of relations among value chain members: We expect the type of relationship to have an impact on the chain's ability to disseminate information on end users. In addition, the type of relationship will have an impact on trust and commitment between chain members, which in turn will have an impact on the possibility to overcome hold-up problems. Finally, the degree of traceability and segregation which the chain allows will be related to possibilities for product differentiation and thus for the ability to serve heterogeneous end user needs.
- Regulations may have an impact on the degree of market orientation, for example by creating an artificially homogenous demand for a product.

Figure 1: Framework for determinants of market orientation of a value chain



It is the purpose of this paper to present the results of four value chain case studies, which have been conducted, based on the above framework. The aim of the case studies was to supplement the theory-based reasoning with empirical material, which can allow us to refine our framework and come up with a revised set of propositions on market orientation in value chains.

METHODOLOGY

As noted above, the aim of the research is to arrive at propositions on market orientation in value chains in agribusiness and fisheries. The aim of the work is thus theory building, and the methodological approach mirrors this.

The framework in figure 1 is our point of departure. It drives the selection of cases, and it was the basis for the development of outlines for desk research and interviews with informants.

The cases were selected in such a way as to maximise variation on dimensions that are of potential importance for the degree of market orientation according to figure 1. We looked for cases that we expected to be different with regard to

- Heterogeneity on served consumer markets
- Heterogeneity in raw material
- Degree and type of regulation
- Degree of relational exchanges
- Power distribution in the chain

A 'value chain' is a theoretical construct, and every approximation in empirical work is a compromise. In defining value chains, our point of departure was in both ends of the chain, i.e. we started by examining a certain type of raw material with a certain geographical delimitation (e.g. New Zealand lamb) and a certain group of products resulting from that raw material, combined with a geographical delimitation (e.g. frozen and chilled lamb products in EU supermarkets).

Based on this procedure and the criteria mentioned above, four cases were selected: New Zealand lamb to the EU, Brazilian orange juice to the EU, Norwegian frozen cod to the UK, and Danish bacon to the UK. The different levels of geographical delimitation are related to the fact that the lamb- and juice-related products are largely comparable among EU countries, whereas bacon and cod-based products are typical for the UK market.

For each case, preparatory desk research, based on accessible documents and websites, was carried out within the framework derived from figure 1 (largely similar to the structure of the case presentations below). The desk research reports identified major areas where information was missing, but an attempt was made to fill these information gaps by interviewing key informants in the respective value chains. Interview guides thus differed among the cases, but a generic interview guide is shown in appendix 1.

Key informant interviews were then carried out with decision-makers in companies and other organisations central to the chosen value chains. A list of interviewed informants appears in appendix 2.

In the following, the cases will be presented in a largely descriptive format, describing the value chain and characterising it according to the main factors of the framework. When informants disagreed on a certain topic, this will be noted. Many of the constructs in our framework imply some type of graduation - there is more or less market-oriented activity, consumers are more or less heterogeneous, relations among chain members are more or less stable. In making such judgements of degree, we mainly refer to the variation that we have found within the four cases. However, it is clearly unavoidable that the authors' many years of work on market orientation in food, agriculture and fisheries has also impacted the judgements arrived at.

BACON FROM DENMARK¹

Background

The pork sector is of considerable importance for the Danish economy. Ever since the first cooperative slaughterhouse was established in 1887, the production of pigs has been constantly growing. In the course of the last 30 years the production has doubled. The slaughtering and processing companies employ 25,000 people, and the sector as a whole gives jobs to about 60,000 people (Danske Slagterier, 2001a). Danish farmers produce more than 20 million pigs per year, and in 2000 the overall pork production Denmark was 1.8 million tons, which places Denmark as number nine on the global list of pork producers (Danske Slagterier, 2001a).

More than 80% of the Danish pork production is exported which makes Denmark one of the world's largest pork exporters. Pork made up 6.1% of the value of all Danish exports in 2000, and had a value of 24,540 million DKK (Danske Slagterier, 2001a). Exports go to more than 100 countries, but among these 8 to 10 are dominant. Two thirds of exports stay within the EU, with Germany, the UK, France and Italy as the main markets. Japan is the most important market outside the EU, followed by Russia, USA and South Korea. Table 1 shows exports of Danish pork in terms of both value and volume.

In terms of volume, Germany is the biggest importer of Danish pork. Germany imported 294,000 tons Danish pork in 2000, followed by the UK (256,000 tons), Japan (218,000 tons) and Russia (113,000 tons). When looking at the value of the exports, it looks a bit different though: Japan was clearly the biggest market in terms of value of the exports (5,745 million DKK), considerably bigger than Germany (4,078 million DKK). USA was also a rather big export market in terms of value in 2000, generating 1,611 million DKK in revenue, in spite of the low volume of 63,000 tons. The opposite is true for Russia, where the large volume of exports only amounted to 937 million DKK. Hence, the various export markets differ considerably in terms of being high or low price markets.

Table 2 shows the development of Danish pork exports during the last 20 years. Whereas countries like the EU members and USA have been the targets for exports for decades beyond the last 20 years, Japan, Russia, and especially South Korea are relatively new markets. In 1980, 36,000 tons of pork were exported to Japan, and this volume has been growing constantly until the 218,000 tons in 2000. Exports to Russia have been stable at around 115,000 tons since 1997. Exports to South Korea have been rather swinging: 28,000

¹ We would like to thank the following for spending time in interviews with us and helping us in preparing this case: Per Poulsen, product manager, Tulip bacon plant, Per Sørensen, marketing director, Danish Bacon and Meat Council, Purchaser with responsibility for bacon, Tesco, Purchaser with responsibility for bacon, Marks & Spencer, Villy Sjøgaard, University of Southern Denmark and Preben Sander Kristensen, Aalborg University Centre.

tons were sold in both 1997 and 1998, raising to 60,000 in 1999 and falling again to 32,000 in 2000. Exports to Germany and Italy have been almost steadily rising for the past 20 years, whereas exports to the UK have been falling. Exports to France and the USA have been swinging, but are higher in 2000 than 20 years ago.

Table 1: Denmark's export of pork, 2000

	<i>Value</i>		<i>Volume</i>	
	Mill. DKK	%	1000 tons	%
EU	13,421	55	877	60
UK	4,456	18	256	17
Germany	4,078	17	294	20
Italy	1,553	6	112	8
France	1,138	5	77	5
Sweden	1,092	4	54	4
Greece	241	1	16	1
Finland	227	1	11	1
Holland	224	1	25	2
Spain	136	1	9	1
Rest of Europe	1,709	7	177	12
Russia	937	4	113	8
Poland	260	1	24	2
Asia	6,567	27	296	20
Japan	5,745	23	218	15
South Korea	247	1	19	2
USA	1,611	6	63	4
Oceania	413	2	22	2
Other markets	746	3	37	2
Total	24,467	100%	1,472	100%

Source: Danske Slagterier, 2001b

Table 2: Development of exports over time for selected countries (1000 tons)

	<i>Germany</i>	<i>UK</i>	<i>Japan</i>	<i>Russia</i>	<i>Italy</i>	<i>France</i>	<i>USA</i>	<i>South Korea</i>
1980	117	336	36	0	70	57	39	0
1990	133	241	115	1	75	107	96	0
1997	325	236	157	116	101	121	52	28
1998	305	248	142	113	113	99	58	28
1999	303	238	205	115	113	82	55	60
2000	294	256	218	113	112	77	63	32

Source: Danske Slagterier, 1981, 1991, 2001b

Most of the Danish pork export consists of fresh or frozen primary cuts, where the meat is being cut according to the customer's specifications. Primary cuts accounted for 63% of the overall Danish pork export in 2000. In addition, canned products are being exported, including cooked ham and a number of products based on ground meat. Bacon, which originally was the main item, is today only a minor part of exports. Bacon is mainly exported to the UK and in 2000 accounted for 7% of the overall export volume and 16% of the overall export value (Danske Slagterier, 2001b). Table 3 shows how exports are distributed across various product categories.

Table 3: Exports according to different product categories, 2000

<i>Product category</i>	<i>Value (1000 DKK)</i>	<i>%</i>	<i>Tons</i>	<i>%</i>
Living animals	798,336	6	68,795	5
Bacon	2,207,534	16	99,701	7
Whole and half pigs	484,074	4	49,497	3
Meat cuts	7,538,597	56	932,994	63
By-products	528,786	4	178,008	12
Processed products	1,297,098	10	94,948	7
Sausages	566,696	4	48,350	3
Total	13,421,121	100	1,472,293	100

Sources: Danske Slagterier, 2001b

Different parts of the animal are exported to different markets. The UK and Japan are the major market for the middle piece, which includes the belly and loin, fore ends are sold to Germany and Russia, and hams are sold to France, Italy and Germany. All parts of the animal are sold on the domestic market. Table 4 shows the flow of the various product categories to the major markets.

Table 4: Product categories on major export markets, 2000 (tons)

	<i>Germany</i>	<i>UK</i>	<i>France</i>	<i>Italy</i>	<i>Japan</i>	<i>USA</i>	<i>Russia</i>
Living animals	58,490	14	40	726	-	16	-
Bacon	1,304	90,653	1,000	28	192	192	9
Whole and half pigs	47,810	-	-	-	4	-	579
Meat cuts	145,959	104,610	60,673	104,010	205,233	43,444	84,273
By-products	22,381	28,916	6,364	4,930	4,500	1,015	19,895
Processed products	16,244	25,313	2,003	1,860	5,406	16,705	3,523
Sausages	1,663	6,931	6,870	117	2,870	1,745	4,901
Total	293,853	256,437	76,948	111,670	218,205	63,117	113,180

Source: Danske Slagterier, 2001b

Table 4 shows that the UK is clearly the biggest market for bacon. For this reason, the present case will concentrate on the value for bacon from the Danish producers to the UK consumer.

Characteristics of raw material

Pig production in Denmark is ruled by nationally agreed specifications, which the various parts of the sector have agreed upon, resulting in a high degree of homogeneity of the raw material. By far, most exports are based on the so-called 'standard pig.' Various other types of pigs are produced as well, but these are mainly for the domestic market and, partly, for Germany (heavier pigs). In addition, there is an 'England pig', which is produced according to special specifications in accordance with the British animal protection law. This law requires, among other things, that pigs must always have so much pen space that they can turn around. Further, the law requires that pigs immediately after weaning must be kept loose, and that they, only shortly before farrowing, should be moved back to the farrowing section. Some British retailers also require that pigs exported to the UK have to be bred by unconfined sows (Danske Slagterier, 2001c). According to our informant from the bacon processor TULIP there is no difference in meat quality between the 'England pigs' and the standard pigs. The production of 'England pigs' is therefore a response to a market demand that does not affect quality parameters like appearance or taste.

Bacon production is intricate because the meat used for bacon is part of an animal, of which many parts have to be commercialised. It is not possible to change the raw material for bacon without also changing the other parts of the pig. Pigs are therefore optimised according to a complicated set of criteria. In order to obtain bacon that in terms of its size corresponds to the wishes of the British consumers, a slaughter weight of about 65 kg is adhered to. This relatively low slaughter weight (in the USA it is around 100 kg) has had the result that

Danish producers can also serve a niche in the American market with its *baby bag ribs*. These ribs are very much in demand on the US market, and because of the difference in slaughter weight they cannot be produced domestically in the USA. Since there also are good markets for the remaining parts of the animal, it is possible to offer each specific product at a competitive price.

With bacon being part of an animal production serving many products and markets, new product development is complicated. The bacon product 'lean & low' is thus simply produced by cutting off the fat during processing. Alternatively, one could develop a pig with less fat, but this may have unwanted effects on other parts of the pig which are sold on markets with other demands.

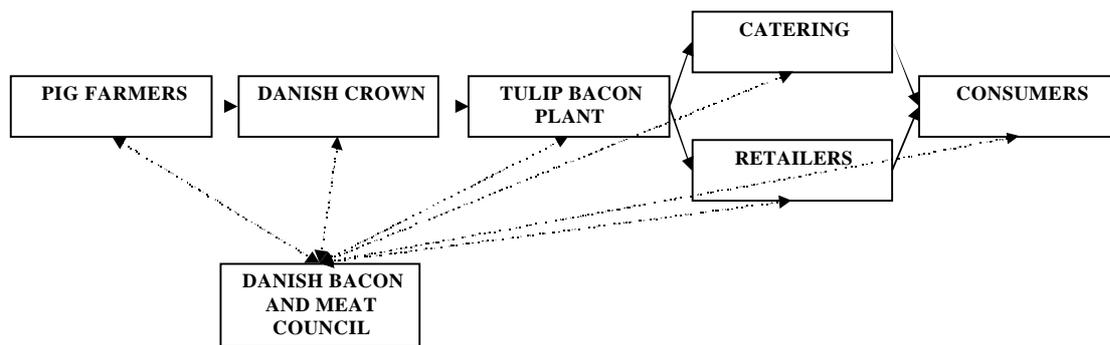
Variations in the quality of the raw material can also occur just before slaughtering. The animals may be stressed, which is not only an animal welfare issue, but also affects the quality of the meat. Danish slaughtering houses have therefore experimented with various measures for reducing the stress level before slaughtering.

Characteristics of the value chain

Configuration

The Danish pork sector, including the bacon industry, is characterised by a very high degree of vertical integration. The sector is based on cooperative principles where the pig farmers own the slaughterhouses, which again own a number of processors. Also, the Danish pork sector is very concentrated: After a series of mergers, only two slaughterhouses are left in Denmark: Danish Crown and Tican. Of these, Danish Crown is by all means the dominant player. The overall value chain for Danish bacon sold to the UK market is shown in figure 2.

Figure 2: The value chain for Danish bacon



The bacon processor Tulip, owned 100% by Danish Crown, is processing the bulk of the pig meat being turned into bacon in Denmark. Tulip also owns slicing plants in the UK, which take care of the slicing of bacon for the UK market, whereas slicing for other markets is done at Tulip's Danish plant. Several slight variations to the chain in figure 2 can occur. The slaughterhouse may sell meat directly to a UK bacon processor, but this is quite rare. Also, Tulip can buy meat from other sources than Danish Crown, if the price is lower elsewhere. For smaller retailers, wholesalers may be involved before the bacon gets to the retailer.

The Danish Bacon and Meat Council is a trade association serving the Danish pork sector.

Actors

Pig farmers, slaughterhouses and processors

There are about 20,000 pig farmers in Denmark. The number of farmers is falling even though the production of pigs has been going up, indicating the ongoing concentration process. 30% of the pig farmers, i.e., about 6,000 farms, supplied 85% of the pigs in 1998 (GIRA, 2000). In spite of this concentration process, most pig farms in Denmark are family farms.

Pig breeding has a long tradition in Denmark and has been supported by the sector's own research institute, the Danish Meat Research Institute. This has contributed to a high degree of quality control with regard to parameters like size, colour, drip loss, pH value, and eating quality.

Danish Crown and the much smaller Tican process together 94% of all pigs produced in Denmark. About 70% of their production goes directly to export, whereas the rest goes to

further processing, including bacon production at Tulip. Tulip owns slicing facilities in the UK, which receive about 70% of their supplies from Tulip.

Tulip markets two different brands: Tulip and Danepak. The traditional products bear the Tulip brand, which is very strong, especially on the Scottish market. Danepak is used for the more innovative products; it is under this brand that product development occurs and where attempts are made to extend the boundaries of the bacon market.

Private label products may bear the label Danish, which is promoted by the Danish Bacon and Meat Council.

The Danish Bacon and Meat Council (DBMC)

The DBMC is the Danish pig sector's trade association providing support to all Danish members of the pork value chain. They disseminate information to all links in the value chain. To pig farmers, slaughterhouses, and secondary processors, the DBMC provides assistance and information both on technical issues and on market-related issues. To retailers and consumers, the DBMC engages in marketing-related activities. The marketing department consists of 12 employees in Denmark and 7 on export markets.

In supporting farmers and other actors in the Danish value chain, it is important for DBMC to combine advice on what is technically feasible with advice on what can be expected to be profitable with regard to the various markets. Much of the latter is based on an analysis of foreign regulations and demands from retailers.

Marketing-related activities use the label 'Danish' as a concept applicable to all member companies. Most marketing activities are business-to-business but on the UK market, consumer marketing is also conducted. In the UK, 'Danish' is well-established not only as a label of origin but also as a quality label. The 'Danish' label is often used in conjunction with retailers' private labels, and in these cases the DBMC cooperates with the British retailers in sales promotion activities like sweepstakes and in-store activities. In carrying out these activities, care is being taken not to interfere with promotion activities of other Danish brands, like Tulip's own brands. Tulip and the DBMC share offices in the UK.

On other markets, like the German market, the 'Danish' label is not used because German consumers are known to prefer domestic meat.

Relations between pig farmers, slaughterhouses and secondary processors

As noted, the Danish pork sector is cooperatively organised which means that the pig farmers own the slaughterhouses. Earlier, pig farmers sometimes alternated between the major slaughterhouses, selling their pigs where they expected the best bonus by the end of the year,

but after the series of mergers this is no longer relevant. The cooperative organisational form has resulted in the pig farmers retaining a much larger part of the overall value created in the pork chain compared to pig farmers in other countries. The reason for this is mainly due to the fact that the cooperatively owned slaughterhouses in turn own a number of companies for secondary processing like the Tulip producer of bacon and other processors of pork products.

In the sector, the cooperative structure is believed to be a major source of stability. Pig prices are less turbulent since the volume stream of supply is predictable for the slaughterhouses, and capacity utilisation in the slaughterhouses is therefore higher. Also, this organisational form favours joint initiatives in quality control and traceability. All actors in the Danish part of the value chain cooperate in the Danish Bacon and Meat Council, enabling joint activities in areas like sales promotions on export markets, market research, breeding, feeding, and increased efficiency. The close relations between the various actors have also proved valuable when facing new market demands like animal welfare, traceability or pigs free from antibiotics residues.

Retailers

For a long time, the UK retailing sector has been dominated by a few large chains (Tesco, Sainsbury, Asda, Safeway, Somerfield) whose market share has been constantly rising. The rising market share has been at the expense of speciality shops, especially butchers, bakers, and green grocers, and at the expense of smaller chains. Thus, the number of butchers in the UK has fallen from 33,939 in 1971 to 12,459 in 1996. Every year independent butchers lose a 2-3% share to the big retail chains, and in 1998 they accounted for only 14% of the sales of red meat, bacon and poultry (GIRA, 1999).

GIRA (1999) estimates that 78% of all bacon is sold through supermarket chains, and believes this share to continue to rise. Table 5 shows the development of market shares for bacon sales of supermarkets and butchers.

Table 5: Shares of bacon sales in different outlets

	<i>Share of bacon sales, %</i>			
	1995	1996	1997	1998
Butchers	11	10	10	9
Supermarkets	72	75	77	78
• Tesco			19	21
• Sainsbury			17	16
• Asda			13	14
• Safeway			9	8
• Somerfield			5	5
• Other			14	14
Other retailers	17	15	13	13
Total	100	100	100	100

Source: TN AGB Sofres, GIRA, 1999

The UK retail chains buy fresh pork mainly from domestic suppliers but about half of the bacon sold is sourced from foreign suppliers. Animal welfare, traceability, safety and new product development are the main parameters against which retailers evaluate their suppliers in this area. The relative weight of these parameters can vary between chains.

Retailers contribute to the value adding process of the bacon chain mainly with regard to their private labels products, where they undertake slicing, packaging and communication. They also impact product development in order to have a selection of products that they believe satisfies the requirements of their customers.

Relations between the pork and bacon sector and retailers

The nature of the relationship seems to differ according to type of chain. With small retailers, there is often no direct relationship since a wholesaler may function as an intermediary. Medium size chains are, according to Tulip's experience, often very price focused which makes it difficult to obtain a good working relationship. The big chains are also focused on price, but at the same time, bacon is an important sales item for them which creates a need to have a supplier of a certain size and strength. The major retailers also require suppliers who are proficient in space management and the analysis of consumer demands. Tulip has therefore three people – one from marketing, one from supplies, one from sales – to serve the big retail chains. Retailers expect this kind of service, and it opens up possibilities for differentiation beyond price. The large volume traded by the big retailers creates a mutual dependence where Tulip becomes dependent on few large customers, but the retailers also depend on Tulip for safe, reliable and up-to-date deliveries.

Tulip claims to have generally good relationships to the retailers, especially Marks & Spencer, which only buys bacon from Tulip. There is mutual exchange of information between the retailers and Tulip, there is cooperation on product development, and there is openness, for example in terms of profitability. Being able to have information on end users is regarded by Tulip as giving a competitive advantage in dealing with retailers.

The retailers interviewed generally expressed satisfaction with the Danish producers' reaction to their demands. Sometimes they find that the Danish pork sector has been a little slow in implementing changes, like the implementation of the new animal welfare rules. Tesco, for example, also claimed that the Danish sector should pursue the animal welfare issue further, for example by introducing new culling methods. The high degree of vertical integration in the Danish pork sector is viewed as an advantage, ensuring stable supplies, homogeneous quality, and consistent implementation of changes when required. Cooperation with Tulip in sales promotion activities is regarded as well functioning, whereas the contribution of the DBMC is viewed as more questionable. Some retailers, however, are also hesitant with regard to sales promotion where a certain country of origin is promoted.

Power dependence

The chain is characterised by two blocks: the retailers on one side and the highly integrated Danish pork sector on the other. This suggests a rather balanced power relationship in the chain between these two major entities. It should be noted, though, that the various actors in the Danish pork sector not always act as one entity, for example when the various partners engage in buying and selling outside the Danish chain.

The interviewed informants both in the UK retail sector and in the Danish pork sector share this judgement about a roughly equal power relationship. As the Tesco informant puts it:

“Looking at the whole value chain we have no more power than, e.g., Danish Crown. In some cases we have more power, in other cases we have less. But we do not have any control of the market. We are also dependent on our suppliers - we cannot just change supplier from one day to another. You also must remember that we only have about 1% of the pig market in Europe and therefore not too much power.... I think that the optimal situation would be to have the power equally divided in the chain in order to make the market grow as much as possible. I think that would be an attractive situation for everybody”.

However, this may change in the future. As an informant from the DBMC pointed out, the retail sector can consolidate further by more mergers and acquisitions, whereas these possibilities are exhausted in the Danish pork sector. Mergers with foreign actors are not an obvious possibility with the present cooperative structure.

Characteristics of end users

UK consumers' consumption of meat, including bacon, has been affected by two major trends: increased health consciousness and a desire for more convenience (ERC, 2000; GIRA, 1999).

A considerable part of the population wants to reduce their meat consumption or to avoid meat altogether. In 1998, 7% claimed to be vegetarians, and another 6% would like to be vegetarians. This trend is most pronounced among young people of higher social standing, and especially in the London area. However, intentions do not always change a person's behaviour, and the effect on actual demand has therefore been minor. Also, UK consumers do not necessarily link bacon to meat:

“Foot and mouth disease was a big concern last year, but while it hurt fresh pork meat a great deal it didn't have a big impact on bacon sales. People didn't seem to be able to connect bacon with pigs”. (Marks & Spencer informant)

Several factors have caused the mentioned trend. BSE has been the most pronounced factor leading to consumers' desire to avoid meat; other factors include the desire to reduce fat intake and animal welfare issues. Retailers agree on the health trend, but this trend has not had a major impact on sales of meat, including bacon.

There are diverging opinions on whether the convenience trend has already topped in the UK or is still ongoing. It is clear, though, that consumers want products to 'eat on the go,' and products that are easy to prepare in the kitchen. Traditional bacon slices are not regarded as convenient, because of the need for cleaning the pan afterwards. This has resulted in new products and in attempts to market the existing products in new ways. Bacon is a traditional breakfast product in the UK but its popularity for breakfast has been declining, because a rising share of women in the workforce do not feel they have time to prepare traditional breakfast in the morning. Instead, bacon has been marketed as a filling for sandwiches, or as an ingredient in salads, which can be consumed all day. Bacon as an ingredient – being sold in tins or in strips – has not been popular in the UK compared to other markets, but may be on the way up.

In the perception of retailers, there has also been a development towards more heterogeneous consumer segments:

“There are more and more segments on the market and the key to growing in the market is to understand all these segments. We have a lot more types of products today than we had 10 years ago in order to satisfy all the segments”. (Tesco informant)

Tulip believes that there is a core segment of male consumers, aged 40-60, who requires the traditional product and who doesn't want to live without it. Differentiation and product development is mainly targeted at younger and female consumers.

There have been several dimensions of differentiation. Smoking and salting has been a traditional source of variation, convenience has been another. For example, Tulip has launched bacon in a bag suitable for microwaving. Other parameters have been package size and fat content. Lean bacon is a demand from certain consumer segments, but production is made difficult partly because of the fact that bacon is only one of the products resulting from a pig, as mentioned above, partly because there is a trade-off between leanness and taste.

Concerning the future development, the Tesco informant believes price to play an important role:

“Concerning the future for bacon on the UK market, I think that bacon will always be strong in the UK, but competition from other convenience products is getting bigger. But as long as bacon is “good value for money” it will also be competitive. Market factors like e.g. the foot and mouth disease, which forced the prices up is therefore a threat. People are not willing to pay more money for bacon”.

Regulatory environment

In addition to the regulations on safety and hygiene, which apply to all meat and food production, relevant regulations affect mainly primary production. There is a ceiling on the number of production units in Denmark, limited to 250 units with a maximum of 7,500 pigs per unit. Also, any single person can own only three units. When the pig production passes a certain threshold, there has to be a certain area for spreading of manure, and for this reason many pig farmers have plant production on the side.

The British animal protection law has had a major impact on the implementation of additional animal welfare in Danish pig production, although British retailers have tried to go beyond these standards. Apart from that, regulations have no immediate impact on the production and marketing of bacon.

Degree of market orientation

All actors in the value chain, except the pig farmers, engage in the generation of intelligence about end users.

Tulip commissions market research via market research companies in the UK and AC Nielsen. This information is supplemented by information obtained from Danish Crown and from the DBMC. The information exchange among these partners is regarded as well functioning.

The DBMC conducts market research, as already mentioned, and has its own staff on the UK market dealing with both market research and sales promotion activities.

Retailers have, as usual, information on sales based on scanner data. Combined with consumers' loyalty cards, this information can be related to personal data, allowing the sales data to be linked to demographics and attitudinal factors.

Tulip and retailers do exchange information on end users. This exchange goes both ways. As noted earlier, Tulip regards it as a competitive advantage that they have information on end users, which they can share with retailers.

There has been a fair degree of product development to accommodate changing end user demands. Some of this product development, like variations in salting and smoking, in package size, and in fat content, have been handled by Tulip, i.e., the actor in the chain closest to retailers. Others, notably the changes to accommodate the UK demand for increased animal welfare, have involved the whole value chain, especially the pig farm level.

Conclusions

The overall degree of market orientation seems to be rather high. Even though some UK retail informants have voiced a desire for more far-reaching and faster response to changed demands, especially in the animal welfare area, we found quite an abundance of activities concerning generation, spreading and response to market intelligence.

In trying to explain this characteristic of the value chain by our framework, we can rule out regulation first, since it does not play a major role with regard to bacon, except for the animal welfare issue. We are thus left with the existence, perception and exploitation of heterogeneity and dynamics of end user and supply markets, and the relational characteristics of the value chain.

There is ample evidence that the end user market exhibits both dynamism and heterogeneity. The opportunities created by this seem to be perceived by the actors in the value chain, even though there was some disagreement on the speed of reaction. There was little evidence of hold-up problems. This may be seen in the light of the rather balanced power relationships between retailers and the Danish pork sector, and the fact that interests within the Danish pork sector are relatively well defined because of the cooperative organisation. The cooperative form makes the Danish part of the value chain a very closed chain with very strong relations, facilitating information exchange and preventing hold-up problems in the exploitation of consumer heterogeneity.

The supply market exhibits only limited heterogeneity. While there is, of course, biological variation, much effort over the decades has gone into minimising it as much as possible. As a result, we would expect market-oriented activities to be concentrated in the lower parts of the

chain. While this is true for most of the activities leading to product development, we have seen the animal welfare issue as a major exception. The changes in animal welfare conditions introduce additional heterogeneity not necessarily in the physical characteristics of the raw material, but in the primary production process. Since the resulting parameter is a credence characteristic, these changes result in demands for traceability and segregation which are at least as high as for other forms of product differentiation in primary production.

It should be noted that the cooperative organisational form is not necessarily reputed for having a positive effect on the degree of market orientation (Søgaard, 1994). Cooperatives are viewed as organisations maximising the sales of the production of their members, and because of the equal treatment proviso they are better at producing a highly standardised quality product than providing for differentiation in response to differentiated consumer needs. Our case qualifies this view in two ways. Firstly, the equal treatment proviso applies to the owners, i.e. the farmers, and hence does not preclude being market oriented in the lower part of the value chain. Secondly, it may be that the facilitation in terms of information transfer and prevention of hold-up problems, which the cooperative form provides, overcompensates for difficulties in finding the necessary arrangements for differentiation also in primary production.

FROZEN COD FROM NORWAY²

Background

Norway is the second largest exporter of seafood in the world and more than 95 percent of the seafood harvested is exported to over 150 countries around the globe. Cod is one of the most valuable species and is used as raw material in several value chains for fresh fish, stockfish, salted fish, and frozen fish.

In this case, we will describe the frozen cod value chain in terms of market orientation and its determinants. The different levels of the value chain from the catch of the fish to the UK end user market are described. The UK was chosen because it is the most significant market for frozen cod products.

The raw material characteristics are described initially. Second, the value chain configuration is outlined and the different parts of the chain are described. Third, the regulatory environment is described. The regulatory arrangements have a significant impact on the relations and power dependence upstream in the value chain. Finally, an initial attempt to analyse the degree of market orientation in the value chain in relation to our framework is carried out.

Characteristics and supply of the raw material

For the purposes of this case, the term ‘raw material’ means the species and its distribution, including important feeding and fishing areas.

Commercial exploitation of cod begins when the fish reaches an age of around 3.5 years. It is sexually mature at the age of 6-7 years. Having taken 4 years for a cod to reach a weight of one kilo, a further three years will see its weight increase to almost 5 kilos. Generally, the larger the fish, the higher will be the price it fetches in the market. Clearly there are complex decisions as to how long one should leave the fish in the sea to grow, whilst risking predation by other species, natural mortality or indeed fishing effort from a competitor.

² We would like to thank the following for spending time in interviews with us and helping us in preparing this case: Branch office director Berit A. Hanssen (The Federation of Norwegian Fishing and Aquaculture Industries), Marketing director Ingunn Strømmesen (The Norwegian Rawfish Organisation), Senior analyst Egil O. Sundheim (The Norwegian Seafood Export Council), Senior researcher Bent Dreyer and Researcher Bjørn I. Bendiksen (The Norwegian Institute of Fisheries and Aquaculture).

Upon reaching maturity, the cod migrates from Northern waters to the coast of Lofoten and Møre to spawn in the winter and early spring. The spawning takes place in the plankton rich feeding areas of upwelling where warm Atlantic water meets cold water from the coast in March and April. While the offshore fishery depends on catches of mainly young cod in the Barents Sea, the traditional and seasonal inshore fishery catches mature cod at the spawning grounds. These cod can be over 20 years old, although they are seldom over 15 years. Mature specimens can be 1.3 metres long, and weigh over 40 kilos, but these fish are becoming more and more seldom. The quantity of eggs spawned increases as a function of size and age of the fish. First time spawners can lay 400,000 eggs whereas older, more mature cod can lay 15 million eggs. The spawning migration starts in early winter, follows the Norwegian coast and is completed by March, with spawning taking place from January to March. This pattern supports the most traditional of Norway's fisheries and it is generally accepted that a spawning stock of 500,000 tons is required to keep the stock at a biologically safe level.

After the cod eggs are fertilized, they hatch and drift north, providing food for many other smaller fish along the coast. The main bulk of the cod is fished in the Barents Sea and every year, Russia and Norway agree on a quota for the coming year. The Norwegian strain of cod, the North-East Arctic Cod, has its main distribution across the Barents Sea. At the turn of the century there was an estimated biomass of 1.1 million tons, of which the parent stock was calculated at 300.000 tons. The smaller cod has its location further east than older fish, mainly in the Russian part of the Barents Sea. Towards the turn of the century, there has been heavy fishing of 3-year-old cod, which is not sexually mature. However, the size of the standing stock allows 3-year olds to be caught. There are regulations concerning the allowable bycatch of small fish in the fishery. The area around the island of Spitsbergen is defined as a reserve, and thereby a sanctuary for the younger cod. The island is international, but under Norwegian jurisdiction; effectively it is a marine reserve almost like a national park for cod and other smaller fish.

Cod has a firm white meat with a flaky texture. The main frozen cut is the fillet, which is cut from both sides of the fish. This muscle can further be divided into loins, portions and tails, depending on which part of the fish they come from, all either with skin on or off and varying levels of bones removed. Steaks and cutlets may also be cut in cross sections from the body. Salted and dried salted cod also incorporate the fish's backbone, while the frozen fish may be round but more commonly gutted and headed. Due to increasing fillet yields, more efficient handling and more diverse product options, the biggest fish are normally valued most; although clearly certain product specifications may need to be adhered to, especially with highly mechanized processing lines.

Fish is recognized as the most perishable foodstuff. Freshness and colour are important quality attributes. Ideally, a fresh cod should be consumed in no more than 7-8 days after catching and stored under ice at 0° C. Transportation time between Northern Norway and the European main land is 48 hours by truck. This means that if the total distribution time is 5 days, the fishing trip length is limited to 3-4 days. Fish older than 4 days are therefore turned into processing for frozen fillets and salting, although clearly any deterioration in freshness

cannot be regained simply by freezing the product. The best frozen product also requires minimal delay between capture and freezing, hence the expansion of frozen at sea products.

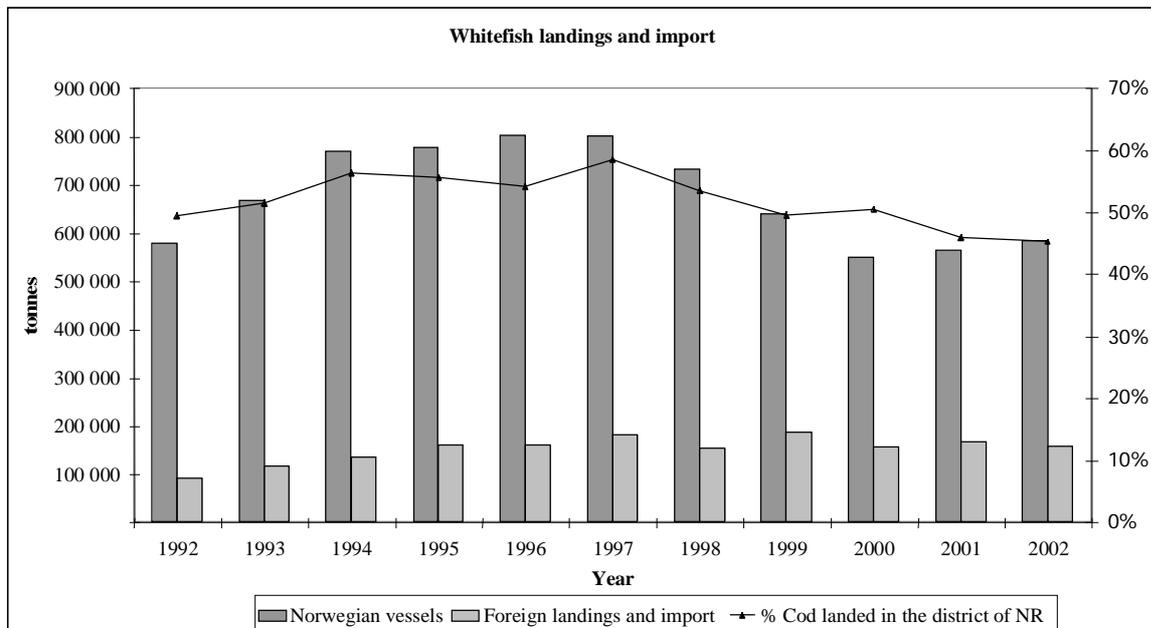
For fresh landed fish, the trip lengths between the landing harbour and the fishing grounds are therefore an important factor for allocation of fish between the fresh fish and the processed fish value chains. Trip lengths are also dependent upon the size of the vessel; larger boats being able to survive rougher offshore sea conditions and having greater storage capacity for fuel and food supplies. In some fisheries, scale economies thus favour the biggest vessels, which are dependent on longer fishing trips. Typically, a fresh fish trawler would have a trip length of 7-10 days, which, assuming that fish is caught constantly and equally throughout the trip, means that no more than 50% of the catch can be used for fresh fish products. Investment in freezing equipment and round freezing or fillet freezing has evolved as an alternative for the biggest vessels. The trip length can then be increased and the quality of the onboard frozen fish kept at a high standard, as demanded by the market. In addition, through this strategy, vessels become independent from onshore processing and are free to add value by exporting the catch directly to foreign buyers. The smaller coastal vessels deliver their catch every day and can deliver a quality standard, which satisfies the highest-paying fresh fish market. But the smallest vessels can catch most economically only when the fish are migrating close to the coast. The seasonal variations in catches are therefore significant and reduce the possibility to supply the fresh fish market which requires a steady stream of supply all year round. Use of fishing gear and chilling and freezing equipment onboard the vessels are all important factors influencing the product quality attributes. Use of fishing nets might for example reduce the fish's ability to bleed out, which discolours the flesh. Such darker fleshed fish can't be used for fresh fish or frozen fillets, but may be acceptable for some salted qualities. Because of the high pressure when fish is hauled up from deep water, for example by trawlers, the flesh might also be destroyed and rendered unsuitable for the best quality products. The size of the fish is also an important attribute, for example in salted cod and klipfish (dried salted cod). The timing of the fishery may also influence the size of the fish caught. Fishing of spawning adult fish always produces the biggest specimen, while fishing in the feeding areas for young fish supplies small fish most suitable for whole frozen fillet. The selection of fishing gears also influences the size of fish landed: the net-mesh size in trawls being an obvious example. Catches also fluctuate according to fish stocks and quota variation over the years according to the composition and sizes of the year classes in the stock.

Figure 3 shows the total supply of whitefish 1992-2002. Cod is the most important whitefish species and accounts for about 50% of the total whitefish landings and varies from 58% when catches were at their highest in 1997-1998 and down to 45% when landings were lowest in 2001 and 2002. The total yearly landings of cod varied between 330,000 (1992) tons to 575,000 (1997) (live weight) and the significant import of cod has varied from 30-37% of the total yearly supply. Imports from Russia have accounted for 77-96% of the total cod import. The Russian supply comes from trawlers, which in the 1990's mainly delivered their fresh catch directly to the Norwegian processing plants. However, the Russian vessels have become more market oriented and invested in onboard processing equipment which makes it possible to collect the value adding from round freezing, filleting and direct export. The

trawlers increasingly fillet their catch, which allows them to export directly to the UK catering market, but this is not registered in the Norwegian statistics. The Norwegian processors are the losers in this chain of events which has resulted in 20% lower Russian cod landings in 2002 compared to 2000.

The cyclical variation, and recently the decline, in stock and quota make the long term planning of raw material access difficult. The stock biomass, and therefore catches, can vary greatly from year to year. To some extent this is normal, due to natural changes in the stock biomass. However, the long-term trend is an overall decrease in the spawning stock caused by the fishery, which in turn causes a decrease in stock recruitment. The quality of the fish varies across the year. The best quality is found during the pre-spawning migration (January to March). After the spawning (spring), the flesh quality naturally deteriorates and is worsened due to the heavy feeding on capelin and other food. During this time of prime raw material access, the fishery may be affected by weather conditions and resource management regulations. It can therefore be concluded that the raw material from cod shows cyclical and unpredictable short-term variations both in volume and quality.

Figure 3: Total supply of whitefish



Source: The Norwegian Directorate of Fisheries

Actors

Fishing vessels

The long Norwegian coastline and very rich fishing grounds, combined with autonomous control of its EEZ, make Norway the biggest fishing nation in Europe, ranking number ten in the world measured in quantity and second in export value. About 6,200 vessels delivered white fish in Norges Råfisklag's district in 2003 (Norway's major landing district). Many of them operate in shorter periods of the year. About 2,500 vessels fish all-year-round according to 2000 figures.

Vessels less than 15m represent about 85% of the number of supplying vessels, but only 22-24% of the total landings and 33% of the landings from Norwegian vessels, as can be seen in table 6. Many of these vessels catch fish only part of the year when the cod is available near the coast. More than 50% of the landings comes from Norwegian and foreign vessels over 28 meters.

As for the different types of vessels and their different abilities to provide input to the value chain, these have been discussed in the section on characteristics and supply of the raw material.

Table 6: Total whitefish in Norges Råfisklags district by vessels

	1999	2000	2001	2002
Total landings mill. kg (Norway)	586	517	529	545
Cod % of total landings in NR district	58	58	57	59
vessels under 14,9 m				
• % landings (NR)	23	24	22	24
• # of vessels (N)	5358	5408	5306	5173
vessels 15-27,9 m				
• % landings (NR)	23	23	23	21
• # of vessels (N)	626	645	627	598
vessels >28 m				
• % landings (NR)	26	23	24	26
• # of vessels (N)	202	280	222	180
foreign vessels				
• % landings (NR)	28	30	31	29
• # of vessels (N)	281	280	222	180
Total # of vessels	6467	6554	6347	6119

Source: The Norwegian Directorate of Fisheries: Total landings for Norway.

(NR) = Norges Råfisklag.

Processing and exporting industry – Norway

The Norwegian fish processing industry consists of a large number of small and medium-sized businesses scattered along the entire coastline. In 1999, some 600 processing businesses employed approximately 13,500 people.

Changes in the national operating environment and in world trade have altered the competitive pressure for the processing industry in recent years. In the whitefish sector a trend towards greater concentration of ownership interests has emerged. The number of active registered buyers has reduced from 370 to 283 in the period 1999-2003. However, several of the mergers have failed, which suggests it is difficult to take advantage of economics of scale, and/or that the reasons for failure lie elsewhere.

Many companies have invested substantial amounts of money in process-oriented improvements such as modern facilities and equipment, quality assurance, skills development and in some marketing initiatives. Investments in processing and freezing equipment require a high degree of capacity utilization and stable supplies of raw materials to be profitable. Steady supplies of raw materials are hard to achieve, due to the fluctuations in seasonal availability of the different fish stocks. In the 1990s there was an increased volume of output, better utilization of capacity and sales in the Norwegian frozen fillet-processing industry, due to a positive development in terms of quotas and increased landings from Russian vessels. However, a survey carried out among processors of frozen fillets based on white fish (including cod) showed that the industry, in the period 1995-2001, gained profit only in 1997 and 1998. Table 7 shows that on average over the period 1995-2001, the net revenue has increased steadily, but the average frozen fillet plant had a yearly loss of 2 million NOK, which is 13% of average equity capital and 2% of net revenue. In 1999-2001 only a third of the firms showed a profit.

The investment both in terms of equity capital and total capital has increased steadily over the period. Firstly, the average number of employees increased in 1995-1997, but decreased 1998-2000, which can be related to the effect of the investment in more efficient processing equipment. In 1997 and 1998, when both the landings of fish and prices were at a record high, this strategy generated a profit. But when the competition for raw material increased and with decreasing market prices, it was no longer possible to generate sufficient margins from the investment in the production equipment. The frozen filleting industry has, however, a significant weaker economic output compared to other sectors within the white fish processing industry that compete for the same raw material. Value chains for salted whitefish are the main competitors in the raw fish market. Salt fish processors require fewer employees and less total capital per unit of net revenue, and have generally been more profitable than processors with frozen fillets as main activity. Other major competing value chains for cod are round frozen fish for further processing, and dried salted cod (klipfish). Frozen round fish is mainly used for klipfish production in Portugal and is shipped to China for cutting fillets, which are then reexported to Europe. The main markets for klipfish are the Catholic regions in Southern Europe and in Brazil where salted cod (bacalao) is an important meal ingredient during Lent and at other periods.

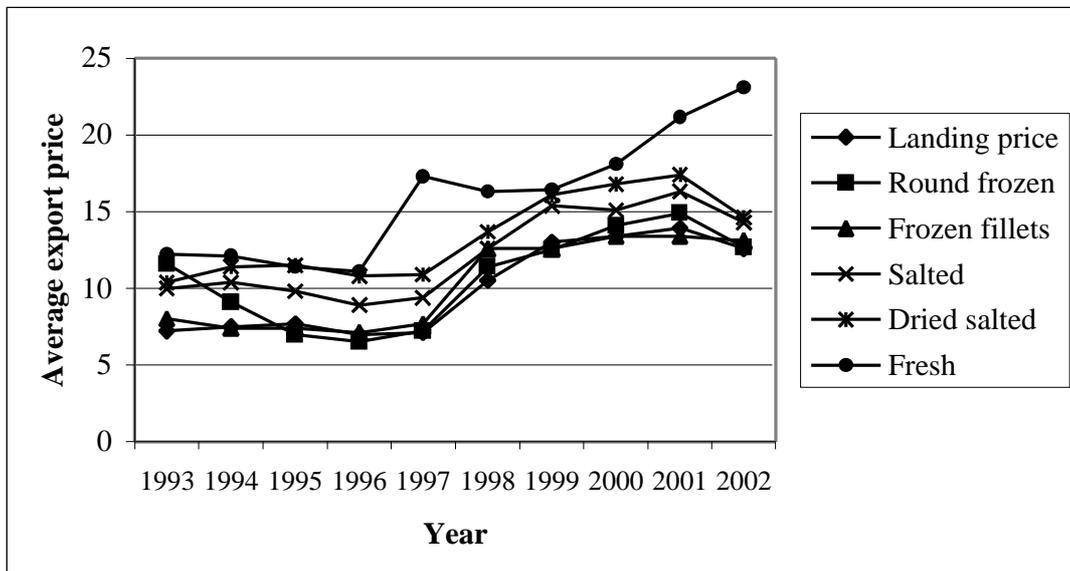
Table 7: Economic performance measures among whitefish processors with frozen fillets as main activity, 1995-2001

	1995 (n=19)	1996 (n=16)	1997 (n=18)	1998 (n=18)	1999 (n=18)	2000 (n=18)	2001 (n=18)	1995- 2001
Average number of employees	91	94	94	90	80	77	71	85
Average equity capital	6	9	10	14	17	17	22	13
Average total capital	41	46	45	57	63	67	72	56
Average net revenue	92	101	109	124	111	115	110	109
Average profit	-2	-1	2	4	-5	-7	-4	-2
% of population with positive profit	37	50	83	89	32	28	33	50
Average return on net revenue in %	-2	-1	2	3	-5	-6	-4	-2
Average return on equity in %	-36	-13	23	26	-31	-40	-19	-15
Average return on investment in %	-6	-3	5	7	-8	-10	-6	-4

Source: Bendiksen, 2001, 2002. Profit is calculated before extraordinary incomes and taxes. Profits, revenues and capital are in mill. NOK

Figure 5 shows the average export prices of products made from cod. All products except fresh cod follow the same pattern. While the prices of fresh cod have been growing continuously since 1996, the prices of the other products levelled out and dipped from 1999-2001 to 2002. Figure 5 also shows that the average value added between landing price and export of frozen fillet and round frozen was negative in periods. Frozen fillets only added value in 1997 and 1998 and that is consistent with Table 7. When exports slowed down in the late 1990's, the prices of round frozen cod increased very fast and the margins for all the other links in the chain decreased. The difference in frozen fillets was very small and to some degree negative, which fits to the observed losses this industry experienced after 1999.

Figure 5: Average prices of Norwegian export products of cod in live weight



Source: The Norwegian Seafood Export Council, Tromsø

Importing and processing industry – UK

The UK import market for frozen cod is characterized by:

- Over 60% of imported volume is frozen fillet
- Iceland replaced Norway as main source of UK cod imports in 1999
- High growth of imports from Russia (+25,4% between 1997 and 1999)

UK-based Smales, one of the biggest processors in Europe, is a model example of a UK importer. Smales is both a primary and secondary processor and one of the largest importers of Norwegian fish – cod being the main species. The Norwegian import consists of frozen at sea fillets produced by Norwegian processing vessels and also fresh cod and haddock supplied daily. Seven days a week, Smales receives fresh fish from Norway directly from approved suppliers. Exporters have to be able to guarantee full traceability back to the vessels, as this is demanded by the buyers. For many years, Smales has insisted on and emphasized the importance of having systems in place that give full traceability.

Smales began importing in 1953 when Norwegian fish was imported once a week through a UK agency. From the 1960's, Smales established its own links to suppliers in Norway and some of these relationships still remain. With the turbulence of the EU fish marketing environment of the 1970s and 80s, which resulted in much diminished opportunities for UK

caught fish, Smales became very active in finding new suppliers. Norway was an obvious choice because of its proximity and abundant supply. Smales established 5-6 reliable contacts for cod and haddock and most of these relationships still function. Smales sources from all along the Norwegian coastline and this geographical range of suppliers provides some insurance against shortfalls in supply and specifications.

To be effective, the relationship with Smales' suppliers is nurtured almost like a personal family-to-family relationship (Smales itself is a family-owned company). This close relationship with the suppliers of frozen cod and haddock provides a strong comparative advantage and a diverse source of supply; some of whom are very small but specialists who can produce semi-processed fish. Smales needs reliable suppliers with whom they can communicate and work very closely in order to serve their own customers' demands, notably the supermarket chains, for daily deliveries.

Retailers

Table 8 shows relative volume changes in retail sales of frozen fish products from 1993 to 1999.

Table 8: Relative volume changes in retail sales of frozen fish products from 1993 to 1999

<i>Fish product</i>	<i>Volume changes (%)</i>
Coated fish	-22.7%
Fish fingers	-18.5%
Fish meals	+28.2%
Fish in sauce	-9.5%
Other frozen fish products	-0.4%

Source: Lozowick, 2000

The table shows a dramatic volume decline in coated fish and fish fingers. The coated fish category covers a diverse range of products, including variations of battered and crumbed portions of varying size and species, and countertrends to the overall pattern of decline will be found within certain market segments. This is also the case within fish fingers, where the overall decline of 18.5% makes an increase in market share by premium quality products, such as those based on cod. Birds Eye (Unilever) branded products dominate premium product sales. At the end of the spectrum, Alaskan Pollock, a main competing species caught in the North Pacific, is widely used and this lower value segment was estimated at some 13,000 tons in 1999.

In marked contrast to the decline in coated products, fish meals show a significant volume increase close to 30 percent. Within this sector there is strong brand presence, especially by

Youngs Bluecrest Seafoods. Supermarket chains have also sought to capitalize on this growing consumer preference for convenient ready-made meals, and their own labels, notably Marks & Spencer, have contributed to the expansion of the market. Overall, cod accounted for almost 37% volume share of frozen fish products (-15.3% volume change since 1997), followed by haddock, which accounted for 11.2% volume share (-23.2% since 1997).

Catering

The catering sector accounts for approximately 40% of fresh and frozen fish sales by volume. Fish sales within the catering, or foodservice, sector are more exposed to the vagaries of the economy and so tends to exhibit cyclical patterns in line with periods of recession and growth. The sector is also extremely diverse and contains a number of quite different segments. In the low cost sector, where greater emphasis is typically placed upon the product's price rather than the quality of the product, suppliers need to pay great attention to product specifications, and clearly, a stringent approach in sourcing product at times when market prices are low.

At the other end of the spectrum, including the top-end of restaurants and hotels, quality may be the predominant concern of the buyer. However, with varied supplies and differing quality levels landed, this too can cause problems in ensuring continuity of delivery. In terms of industrial structure, the catering sector is far more fragmented than the retailing sector. This brings other challenges and opportunities for market entry. Over the years there has been some tendency towards more centralized buying, which increases the transparency of market signals but this may also adversely alter the balance of power within the channel.

There has been a move towards meal assembly and skill reduction in many restaurant kitchens, combined with more adventurous consumers willing to try a more diverse range of meals. This has resulted in increased demand for value added items. Cod remains one of the most important species, but this is heavily influenced by its role in fish and chips, which represents approximately 30% of caterers' fish volumes.

Characteristics of end users

Cod is very important for the UK consumer – it has been a basic part of the meal for many years. It thus is a traditional product, which was cooked simply or eaten as fish and chips. However, this has been changing. Some consumer segments are more adventurous and have tried new recipes, encouraged by TV chefs and other media. Convenience has been an important trend for many years, but what it means to the consumer has been changing as well. Traditional convenience products like fish fingers have declined, whereas other categories like fish meals have gone up, and especially high valued-added branded products have been growing. This reflects a general consumer trend where demand for convenience product is extending from the low quality segments to all consumer segments, including

those demanding high quality and a varied assortment of products. There has been a growing interest for meal component convenience products, where consumers still retain part of the responsibility for composing the meal. In addition, regional variations also play a role, adding additional heterogeneity to the end user market.

Frozen fish products were the largest sector in volume of the UK frozen food market in 1999 (16.9% volume share). Following a movement away from red meat with the outbreak of BSE in 1996 sales of frozen cod expanded but have since levelled off. In the period 1993-99, rising raw material prices resulted in an overall 5.2% increase in sales value, despite an 11.3% decline in volume. Cod remains one of the most popular fish consumed in the UK – taking both retail and catering purchases into consideration. Table 9 shows how frozen cod products were consumed in 1999.

Table 9: Frozen cod consumed in the UK

	1999	
	Tons	% share
Frozen products (household)	49,914	42.4
Of which:		
- Fish fingers	11.661	9.9
- Breaded fillets	8.898	7.5
- Fish in sauce	5.666	4.8
- Battered fillets	5.651	4.8
Catering/foodservice:	48,100	40.8
Of which: Fish & Chip Shops	28.188	23.9

Source: Lozowick, 2000

Regulatory environment

Resource management

The Directorate of Fisheries is the executive agency of the Ministry of Fisheries with respect to regulation, guidance, supervision and control. Supervising and control of the fleet to ensure compliance with laws and regulations are high priority tasks. Both Norwegian and foreign fishing vessels are subject to stringent controls in all Norwegian fishing waters. This applies to controls both at sea and during the landing of the catch, and to the technical regulations aimed at preventing the fishing of immature fish. The Coast Guard implements the relevant regulations and carries out controls at sea.

The fisheries authorities ensure that the conditions under which fish and seafood are produced comply with the rules and regulations. To this end, the fisheries authorities work with various other public agencies at the central, county municipal and municipal level, and

with the police. The Ministry of Fisheries is also responsible for supervising compliance with current regulations governing sales and exports. There are three corner stones of the control and enforcement system in Norway, i.e. the Coast Guard, the Directorate of Fisheries and the Sales Organizations.

The most important sources of information, in controlling fishing activity and checking the reliability of catch reports, are logbooks and sales notes. All vessels are obliged to maintain a logbook. The sales notes, or sales contracts between the fishermen and the buyers, are the basis for keeping accounts of catches in relation to quotas. Given the information from sales notes, the authorities are able to estimate when a quota is exhausted and stop the fishing activity accordingly.

Hitherto, economic and market parameters have not been taken into account in determining quotas and the allocation of catches. Despite this stance, there is clear reason to believe that quotas and allocation of catches based on end user demand, rather than resource availability, could increase the degree of value creation. In many ways this reflects the supply-led and biologically based roots of the fisheries industry.

Most of the key fish stocks in Norwegian fisheries are shared with other countries. TACs (total allowable catch) and national quotas for such joint stocks are fixed in negotiations between the countries involved. Norway enters into annual bilateral quota agreements with Russia, the European Union, the Faeroe Islands, Greenland, Iceland and Poland. With the exception of the agreement with Poland, these agreements include exchange of quotas. The Norwegian fisheries are regulated through annual regulations on the sharing of the national quotas on all regulated stocks amongst the different groups and amongst the participating vessels. The different regulations give specific rules on the implementation of the fisheries, and, as part of this, the division of the annual quota amongst the different vessel and gear groups. In addition, there are rules pertaining to periodic regulations of out-take, by-catch rules, start and stop dates, sanctions when the regulations are broken, and, in some cases, even exemption criteria from the main rules in the regulation.

In addition to regulation of minimum fish size, minimum mesh size and by-catch rules, the most important instruments to secure a sound management of marine resources are as follows: discard ban, closure of fishing grounds with too high intermixture of undersized fish, and a requirement that a vessel has to change fishing grounds if the intermixture of undersized fish exceeds permitted levels. Another important measure is the use of catch sorting devices, i.e. grids.

Value chain management

In general, the Norwegian part of the value chain has been divided into three parts/levels by the national legislation. Today, three Acts contribute to this division (Dreyer & Johnsen, 2000): *Deltagerloven*, *råfiskloven* and *eksportloven*.

Deltagerloven (The Participation Act) determines and limits who can own fishing vessels and through this ownership gain access to fishing quotas. The basic idea is that in order to own a vessel, you have to be an active fisherman. The processing industry is therefore excluded from (at least) a higher degree of upstream integration through vessel ownership. The use of special types of fishing gear requires a license for larger vessels. One vessel might have more than one license. All use of bottom trawl and Danish seine requires a specific license.

Norwegian fishing quotas are divided annually between the different types of vessels, and in many cases each vessel receives a fixed vessel quota for the various fish species. During the 1990's more of the fishing effort was regulated through the quota system. The trawler fleet has had individual quotas from 1990 after trials in part of this fleet from 1984. Other conventional vessels (mostly long liners) over 28 meters got individual quotas from 2000 (Rånes, 2003). The coastal fleet has for most of the period been regulated through group quotas and maximum quotas. When quotas are reached, the fishing is stopped. This regulation form means that fishing as much as possible in the shortest possible time could add most value. However, the time to take care of the catch and product quality is reduced, which limits the possible value that the chain can accumulate (Trondsen, 2001). There are several technical regulations to prevent the fishing of substandard fish, and throwing caught fish back into the ocean is prohibited.

Råfiskloven (The Raw Fish Act) of 1951 determines that all first-hand sales of fish and shellfish, except for farmed fish, are to be carried out through the fishermen's own sales organisations. Currently there are 6 such organisations, which have legally protected rights to first-hand sales either with respect to a geographical district or with respect to certain species of fish. The sales organisations are based partly on indirect membership through the fishermen's associations, partly on direct membership of individual fishermen or crews, and partly on a combination of these forms of membership.

The aims of the sales organisations are, through organized sales, to ensure high and stable prices and reliable terms of payment. The individual sales organisations have arranged their activities in different ways to achieve this. Examples of such methods are setting a maximum size of catch that a vessel is allowed to land at once or allowing a limited number of vessels to be at sea at once to prevent collapse in the market because of large landings or low demand. On behalf of the Government, one of the organisations collects the mandatory fees the fishermen have to pay as social security and pensions fees. There is a levy on all first-hand sales to cover the administrative costs of the sales organisations.

Minimum first-hand price levels are usually determined by negotiations between the sales organisations and the buyers' organisations. If agreement cannot be reached, the Raw Fish Act gives sales organisations the authority to set the minimum prices.

According to the Norwegian Raw fish act, the fish buyer is obliged to purchase all species in a catch, even if the buyer is only interested in one. On average, cod makes up only half of the catch. Buyers of cod are therefore forced by law to purchase a lot of species and qualities, which do not fit into specific processing operations, e.g. cod frozen fillet production.

Eksportloven (The Fish Export Act) determines and limits who is allowed to export fish products. There are about 600 licensed exporters. The Norwegian Seafood Export Council (NSEC) and its activities are founded in the Fish Export Act. The activities are entirely financed by the industry through statutory fees, and are governed by a committee. Approval of exporters, dissemination of information to the industry, and joint promotion of Norwegian seafood on both national and international levels are tasks imposed upon NSEC through legislation.

International institutions

The Norwegian fishing industry is purchasing raw material and is exporting fish products at a global scale. The institutions set up by the WTO therefore influence the processing and export of Norwegian fish products through quotas and tariffs.

Norway is not a member of the European Union, but the institutions set up by the EU and EFTA and bilateral agreements include Norway in the EU's internal market. However, the export of several fish products – including frozen fillets – is restricted by import tariffs. The reason for import tariffs is to protect the Union's processing industry from Norwegian competitors.

As an example of the impact of international legislation on the Norwegian value chain, the number of licenses for first hand purchases of white fish increased strongly around 1990. This was related to the implementation of new laws by which Norway was able to comply to the EEA (The European Economic Area) agreement with the European Union. Before 1990, it was the fishermen's sales organization that issued licenses to purchase fish from fishing vessels. After 1990, this authority was transferred to the Directorate of Fisheries where licenses were issued on a non-discriminatory basis. The number of buyers entering the sector increased substantially, especially in trading and conventional processing (salting/drying), where the entry barriers to the value chain were lowest.

Relations and power dependence

Between fishermen and the processing industry

The Participation Act, the quota system and other institutional arrangements regulate the relations between the fishermen and the processing industry. Firstly, government policy is to improve the profitability in fishing by increasing the entry barriers through licenses and motivating exit by quota and decommission incentives. The impact of this policy has been fewer vessels, increased quota per vessel and increasing profit in the catching sectors that

also improve their negotiating power in the market. In turn, this increases their ability to invest further in onboard processing. Despite this apparent scope for diversification by the catching sector, paradoxically the processing industry does not have a legal right to own fishing vessels and thereby enjoy a similar level of opportunity for vertical integration. Nonetheless, despite the legal barrier, a number of processors are given governmental approval for part ownership of fishing vessels.

Through license requirements, the authorities have tried to force some trawlers to land their catches to specific regions or processor plants, despite lower prices. Those regulations have, however, tended to fail, especially in situations where the original processors went out of business because of the reluctance of the new owners of the fishing vessels to comply with the rules. Dreyer and Johnsen (2000) have shown that in situations where quotas are low and when alternative buyers are willing and able to pay higher prices for catches, reluctance to adhere to market command policies is inevitably reduced.

There are no such entry and exit barriers in the processing and export links in the value chain, other than the governmental financial instruments. However, such governmental investments in the frozen fillet industry have been shown to be very unprofitable. The high number of both new entrants and departures in an overall declining population of active buyers, not to mention a high number of inactive, although approved and licensed, buyers who buy from processors, indicate the depressed and difficult circumstances of the processing sector within the value chain.

Between the processing industry and retailer/caterers

As is well known, there has been a considerable concentration of market power within the multiple retailers, and their centralized purchasing has resulted in a shift of power from the processors to the retailers in some value chains. The retailers' private label strategy, especially in the UK, has contributed to this tendency. As our informant at processor Smales puts it:

“Looking at the whole industry the power is clearly with the large major supermarkets. We can live with that – but of course it is difficult to get the margins we require. This trend is not going to go away, so you just have to live with that.”

The size of the retailers has enabled them to purchase fish on the global market, and the introduction of the “whitefish” concept has also enabled them to substitute cod with other species depending on prevailing market prices and supplies. It must also be recognized that fish constitutes a comparatively minor part of the retailers' overall offering to the food (and increasingly non-food) consumer. As such it is less likely that supermarkets will have either the incentive or the inclination to deviate from their general practice of maximizing their own internal margins.

There has been a similar tendency towards concentration, although much less strong, in the catering sector. Catering companies have concentrated their purchasing function and consequently gained power over the processors. The catering sector is also characterized by fierce competition and a cost-focussed, low price strategy. This emphasis has impacted on their willingness and ability to purchase premium, high-priced raw material, although clearly there are some market sectors where such attributes are sought.

Summing up, it appears that the processors have been squeezed between limited and declining supplies of fish and the increasing purchasing power of retailers and caterers. Table 7 shows that the processors' economic output is close to zero or negative. The value created in the chain seems to be allocated mainly within both the fishing sector and the link facing the end user market. The fishing sector's power base is founded on limited access to cod and institutional arrangements. The retailers' and catering sector's power base seems to be founded on concentrated purchasing power and direct access to and communication with the end user markets.

Degree of market orientation

As in our other cases, retailers possess information on end users based on retailers' sales data. Some of that is being passed on to processors, especially in those cases where processors supply products to the retailer's private labels. The more we go up the chain, the less intelligence generation and dissemination on end users seems to occur. However, due to the high degree of fragmentation and regulation of the sector, a variety of trade associations or semi-governmental bodies engage in the generation and dissemination of market intelligence, and partly also engage in triggering responses. We will briefly discuss the activities of the largest sales organisation, Norges Råfisklag, the Federation of Norwegian Fishing and Aquaculture Industries (Fiskeri- og Havbruksnæringens Landsforening, FHL), and the Norwegian Seafood Export Council (Eksportutvalget for Fisk).

Norges Råfisklag does a considerable amount of work in generating market intelligence. Market reports are compiled on a regular basis for cod and other important species sold through the organization. The main purpose of these reports is to generate intelligence as a background for setting minimum first-hand prices. Therefore they mostly contain information on prices and volumes traded in different kinds of products on different types of markets. All market reports are easily accessible on the internet and can be downloaded for free (www.rafisklaget.no). Price information obviously is an indirect source of information on end users' value perception, but apart from that, end user intelligence is sparse in these reports.

Norges Råfisklag has organized a "market group" with fishermen, processors, and the research institution Fiskeriforskning serving as board members. The purpose of the "market group" is to support projects related to new product development, marketing efforts on the Norwegian and export markets to enhance the quality of the fish and to support related student projects. The budget is 1.8 million NOK per year and the group is mandated to grant

up to 300 thousand NOK per project. Some of these projects contain aspects of the generation of market intelligence, and some also aim to assess potential responses.

In an attempt to secure the quality of landed fish, the buyers/processors are allowed to reduce the minimum first-hand price by up to 50% if the fish has a lower quality than the standards set by Norges Råfisklag and the Directorate of Fisheries. Assuming that high quality of fish supplies can be interpreted as a response to the end users' demand for superior value, the quality element of the price-setting regime may be seen as a market-oriented action taken by parts of the value chain.

However, it has been noted that processors can choose to put the fish into different value chains that accept different degrees of variation in the quality attributes such as freshness and colour. This does introduce scope for interpretation and variation of the intended purpose of the price reduction. Price discrimination based on different quality levels has been difficult to develop in Norway due to the lack of fish auctions and low competitive pressure in many landing markets. Discriminatory price signals for individual lots have been further occluded because buyers are obliged to buy all fish in the catch. Norges Råfisklag did try a quality based price system some years ago but this was abandoned. The scheme stopped because, whilst high prices were paid for best quality fish when there were supply shortages, in periods of excess supply, fish quality standards were effectively downgraded to a level commensurate with the lower prices prevailing. This tendency has also been observed in EU markets, and despite the imposition of regulatory inspection mechanisms these can be difficult to enforce – especially on a highly perishable raw material.

The most significant activity of the Federation of Norwegian Fishing and Aquaculture Industries (FHL, www.fhl.no) from the viewpoint of market orientation was the creation of the Fishery and Aquaculture Research Fund (Fiskeri og havbruksnæringens forskningsfond – FHF, www.fiskerifond.no). From January 2001, a separate statutory research fee on the export of Norwegian fish and seafood (3 pro mille) was implemented. This fee generates approximately 100 million NOK per year for research and development. The board of the fund has members from the processing industry, the fishermen's organization (Norges Fiskarlag), and the Norwegian Confederation of Trade Unions (LO). All activities sponsored by the fund must be based on a value chain perspective, including the perspective of end users. An example of an activity sponsored was the development of fully automated filleting machines that are able to detect and remove thick bones and nematodes from the cod fillets. Most projects are of a technical nature, and the way they are supposed to be based on end user intelligence is not always clear. FHL also runs the "fillet forum", where 18 processors focus on product development related activities, e.g. the development of marinating processes and technologies, the development of organic "glue" for pasting fillets together and the development of packaging technologies. Finally, FHF funds a number of 'market stipends'; a way of financing people on selected export markets in order to do studies which are intended to generate market intelligence.

The purpose of the Norwegian Seafood Export Council is to increase the interest and awareness of Norwegian seafood in Norway and the rest of the world. The industry finances

its activities through a separate statutory fee on the export of Norwegian fish and seafood (3% in recent years, generating approximately 400 million NOK). Its activities are founded in the Fish Export Act.

Approval of exporters, dissemination of information to the industry and joint marketing of Norwegian seafood on both national and international levels are tasks imposed upon the NSEC through legislation. The Council's headquarters and administrative offices are located in Tromsø, and it has representatives in Germany (Hamburg), France (Paris), Spain (Madrid), Brazil (Rio de Janeiro), USA (Boston), Japan (Tokyo), and China (Hong Kong and Beijing). NSEC prepares statistics and conducts market analyses for seafood. The recipients of this information are exporters and industry participants, and the goal is to ensure a best possible decision basis for the industry, the authorities and NSEC internally. The work is performed in close collaboration with industrial participants, organisations within the industry, the authorities and Norwegian and international research and development environments. Most of the intelligence generated is disseminated through seminars, reports, newsletters, and the internet (see www.seafood.no for an extensive list of information which is downloadable for free). Exporters can also subscribe to more sensitive information through a secure internet site. Apart from some small programmes regarding market research of new fish species, most of the market information is about prices, competition and the effect of the promotion programmes.

One of NSEC's limitations is that they are financed by an export levy on all products. This means that all the exporters feel that they have a right to get a share back of the Council's investment. New products and trends that are not directly related to traditional and more established products therefore have low priority and this can discourage more innovative research.

NSEC spends considerable sums on generic marketing. This generic promotion of Norwegian seafood functions as a support for the exporters' own sales promotions. In 2000, 340 million NOK were spent on marketing activities. 16.5 million was spent on promoting white fish (including cod), of which 7 million were spent on the UK market. A limiting factor is the lack of any relationship between the promotion activity and product quality. All exporters paying their fee to NSEC and maintaining a minimum product quality, according to Governmental standards, are allowed to use the branding material from NSEC. This results in promotional activity that is focused on a minimum generic quality standard and this may impede the promotion of superior quality seafood unless appropriate spends are made to support individual incremental quality levels.

Another program is Norges Eksportråd (Norwegian Export Council). The council works closely with the Ministry of Foreign affairs, but it has to finance part of their effort from their clients. This program is centred on active promotions through organizing market shows, exhibitions and investigations for groups of export companies.

Conclusions

It seems to be beyond doubt that cod is a heterogeneous and dynamic raw material. There is also ample evidence that end user demand is heterogeneous and dynamic. Frozen cod finds its way to consumers in many different forms and products, with ample geographic and segment differentiation, and the trend towards branded high value added products has created additional possibilities for further product differentiation. With high heterogeneity at both ends of the value chain, our framework would predict considerable incentives for a high degree of market orientation, with both intelligence generation and responsiveness quite evenly distributed across the chain, and a derived demand for good dissemination of intelligence throughout the chain.

The empirical findings in the case support this partly, but not fully. We do find intelligence generation, dissemination and responsiveness in the lower parts of the value chain, mainly in the context of designing, producing and marketing high-value products. We find considerably less of this in the upper part of the value chain. This is partly compensated by the activities of trade associations and semi-governmental bodies, which generate some market intelligence, especially price information, disseminate it to the sector, and also have some involvement in projects aimed at market responsiveness. However, degree of market orientation of fishermen and the Norwegian processors still remains relatively low. This is especially noteworthy for the processors, since they have been under considerable competitive pressure with zero or negative profitability for a number of years.

The relationships among the actors can provide part of the explanation for this. In the relationships between processors and retailers/catering, we find moderate to fairly high degrees of trust, stable networks, and regular and repeated streams of transactions. The relationships can be characterized as an organized or private network, a model facilitating a higher degree of openness, cooperation and information exchange. Dealing in value-added seafood products typically requires the processor to conform to retailers' specific quality assurance schemes and to invest in retailer specific processing and product development. The trust and commitment in the relationship can ensure that such transaction-specific investments are being carried out.

Hold-up problems are apparent upstream in the value chain. The fishermen do not want to invest too heavily in transaction-specific assets. Consequently in some instances, and during some time periods, this risk aversion may prevent them from realizing higher market prices. The degree of trust and commitment between fishermen and the processing industry is low to moderate. The regulation of first hand sales makes only minor provisions for using end user based criteria in the transactions, namely the possibility of reducing minimum prices if minimum quality requirements are not met. Apart from that, it seems that the heterogeneity of the raw material is to a large extent sent further down the value chain.

As noted, a number of bodies perform functions that can increase the level of market orientation in the chain. Since these bodies are based in Norway, they must be assumed to serve mostly the Norwegian, and hence the upper part of the value chain. Still, it is clear that

segregation of products through the value chain has been, and still is, an obstacle for value-adding activities in the upper parts of the chain, and many of the projects carried out therefore seem to be directed either mainly towards the processing sector or aim at a general improvement of cost-efficiency. There are activities, though, that aim to improve the general traceability of the product throughout the value chain, also from a quality differentiation perspective. One example of efforts trying to deal with this problem at the chain level is the EU-funded concerted action programme “Tracefish” co-ordinated by the research institution Fiskeriforskning.

The relationship between fishermen and processors is under change. There is an ongoing trend towards integration of processors and fishermen through ownership, contracts and long-term co-operation, with modest success. On the other hand, legislation and also the demand from other value chains (i.e. value chains for fresh, dried and salted cod products) further upstream sometimes conflict with this confluence of relations in the value chain for frozen cod.

There are also trends toward more market orientation among the bigger vessels that can freeze the catch onboard. This function makes it possible to store the catch and differentiate the quality, directing the fish towards the value chain where the best values can be added. This development was a direct response to the decreasing market prices in the traditional value chain, which also included the land based processors.

ORANGE JUICE FROM BRAZIL³

Background

This case deals with the value chain by which Brazilian oranges are transformed to orange juice on the shelves of supermarkets in the EU. In terms of technology, the case is restricted to orange juice that is based on frozen concentrate, which by far accounts for the largest segment of the market. Brazil is the world's largest producer of frozen concentrated orange juice (FCOJ), and correspondingly the orange juice chain is very important for the Brazilian agri-food business. Brazil's largest competitor on the world market is the US with Florida as the main producing state.

In terms of dominating technology there are two main segments within orange juice production: FCOJ (frozen concentrated orange juice) and NFC (not from concentrate). NFC, as the name implies, is a fresh product that may or may not have gone through a pasteurisation process. FCOJ is concentrated early in the production process and diluted with water again before reaching the consumer. While FCOJ is the largest segment, NFC has shown the highest growth rate on the European market with an annual growth of roughly 11% from 1993-1998 compared with FCOJ growing at approximately 3% a year.

European import statistics for orange juice show that while Brazil is the largest supplier of FCOJ, the US is the leading foreign supplier of NFC orange juice, although in this segment domestic European suppliers account for the largest market share. We will concentrate on FCOJ given that this is by far the largest product of the Brazilian orange juice industry. Table 10 shows orange juice imports by the European Union by selected origin for 1996-1998.

³ We would like to thank the following for spending time in interviews with us and helping us in preparing this case: Ademerval Garcia, Richardo Miranda, Soren Jensen, Mr. Virtuan, and Jan Hermans from the Association of the Industry of Juices and Nectars from Fruits and Vegetables of the European Union. A special thanks goes to Marcos Favas Neves and his team from the University of São Paulo at Ribeirão Preto for their help in preparing this case.

Table 10: Share of orange juice imports to the EU

Product/year	Brazil		US		Other	
	%	Mill. gallons	%	Mill. gallons	%	Mill. gallons
FJOC						
1996	82%	863	13%	137	5%	53
1997	81%	883	14%	153	5%	54
1998	80%	919	12%	138	8%	92
NFC						
1996	15%	4	41%	11	44%	12
1997	15%	4	45%	13	40%	11
1998	19%	7	49%	17	32%	11

Source: Goodrich & Brown, 2001

Brazil was responsible for 50% of the world's frozen concentrated orange juice production in 1996/97 (Neves, Zylbersztajn & Neves, 1998), followed by the US with 45%. Both countries combined produce more than 95% of the world's orange juice, and Brazil alone is responsible for 80% of world's exports of FCOJ. Brazil's largest market for FCOJ is Europe followed by North America and Asia, while Florida producers supply the largest share of their production to the home market. Based on ABECitrus (Brazilian Orange Juice Industry Association) data, Europe was the taker of 68.5% of all exports of FCOJ out of São Paulo (the main producing state) in 2000-2001, with the North-America free-trade countries taking 21.4% of total. Here, we will focus on Brazilian exports of FCOJ to the European market.

The worldwide market for commercial fruit juices is growing. This growth is fuelled by changes in geographic variables, mainly the urbanisation of the population, demographic variables, as elderly populations, better incomes, more women working full time, and psychological and behavioural variables, such as consumers striving for a natural, healthy lifestyle as well as the convenience trend which fits well with juice consumption.

Despite growth in demand, prices have been decreasing. Over the last decade, production in Brazil and Florida has increased by 79.4% in total, outpacing demand growth, which has been a significant contributing factor to the decrease in price. According to the Florida Department of Citrus (2001) an increase in Florida orange-juice production is expected in upcoming years, which could result in a further decrease in US orange juice imports and an increase in the US orange juice exports. So where Florida in past years has been a net importer, it may in the years ahead become a net exporter. However, the US market is also attractive to Brazilian exporters, given that it consumes more than 40% of the worldwide orange juice consumption, although having only 4.6% of the world population. The Brazilian FCOJ is subject to a high tariff to get into the US market, and dealing with this tariff has been a motivation for Brazilian companies to buy their way into industrial units in Florida. Another motivation factor for this concentration and globalisation is to build critical mass in the market. This can be done by buying from a larger number of orange growers, and thereby obtaining more possibilities to influence market prices.

Whereas the US is expected to increase production, the estimates for Brazil's future orange juice production appear to be more uncertain. As part of a diversification strategy, one of Brazil's largest processing companies plans to invest in 2 million trees in Brazil, suggesting that Brazil's orange juice production, like Florida's, could increase in the coming years (Florida Department of Citrus, 2001). Still, orange juice prices are anticipated to improve in 2001-2002 based on an expectation of reduced world orange juice supplies (Florida Department of Citrus, 2001). This is based on predictions that Brazil's orange juice supplies are expected to decrease significantly while Florida's orange juice supplies are expected to increase moderately. At the time of writing this case (mid 2002), prices in Brazil have gone up due to two seasons of bad crop and reallocation of the land to farming of other crops, e.g. sugar cane. The result is that a shortage in orange juice on the European market has driven prices up.

This decline in supply suggests that, in 2001-2002, Sao Paulo exports to Europe and NAFTA countries are estimated to decline, based on the expected decline in Brazilian orange juice availability, and an expected reduction in US orange juice import demand given increased Florida orange juice production (Florida Citrus Outlook, 2001-02). However, to the extent that Brazil exports less orange juice to the US, it is also possible that Brazil could export more to other world markets such as Europe, which by itself would put downward pressure on prices on those markets. And further, the Brazilian processing industry is also trying to develop the internal market, which currently has a high, unexploited potential.

The allocation of juice from Brazil, Florida and other countries to world markets is determined by the strength of demand in the US and various world markets and the structure of world transportation and tariff costs. Brazil is more competitive in costs than the US in growing, picking and haulage, and processing. The US, on the other hand, is more competitive in transportation and distribution.

Characteristics of raw material

Raw material is important to the production of orange juice, and the quality of the oranges varies from year to year. The quality of oranges in Brazil depends a lot on the weather since there are no irrigation systems available, which could otherwise be used to control the output of oranges, so nature alone determines the size and quality of the crop. However, processors seek to produce a consistent quality from year to year by keeping a buffer of different ratio juices in storage and blending high ratio juice with low ratio juice

FCOJ has a number of quality attributes, including brix (refers to the amount of water/strength of concentrate – the higher the brix the sweeter), acid, ratio viscosity, colour and flavour. These attributes can be important for determining the bulk price for FCOJ.

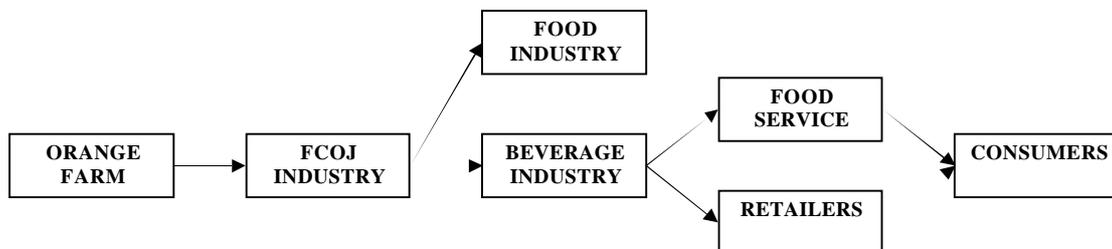
Quality is related to seasonality, and as a result Brazil and Florida production, taking place under opposite seasonality, differ in quality at any point in time. In addition, over the course of the season, the quality of FCOJ may vary in both Brazil and Florida. Quality is also affected by non-seasonal factors; e.g. a significant number of Brazil's orange trees have been infected with citrus clorosis variegated (CVC), which affects the output from the trees.

Characteristics of the value chain

Configuration

The overall FCOJ value chain is depicted in figure 6. It consists of growers and the FCOJ industry, located in Brazil, and the beverage industry, retailers and foodservice and finally consumers, located in Europe. After production and processing, the FCOJ is exported from Santos in Brazil in bulk systems or drums and sent by vessels to ports in Europe. The main ports of arrival are Rotterdam, Amsterdam, Antwerp, Gent and Hamburg. After leaving the port, the juice is sold to bottlers in the beverage industry, or can be used by the food industry as an ingredient of flavoured foods. These actors sell the juice to retailers or food service companies before final consumption. As noted by Neves et al. (1998), several changes take place in the fruit juice distribution channels environment in Europe, including a growing importance of food service, the penetration of the global beverage brands (mainly Coca-Cola/Minute Maid and Pepsi/Tropicana), and concentration in retailing.

Figure 6: The FCOJ value chain



Adapted from Neves, 1999; Neves et al., 1998

Actors

Orange farms

Oranges are grown in more than 100 countries, but the two major producing countries are Brazil and the US, which combined represent 52% of the world's production. In the Brazilian production, the state of São Paulo is responsible for 82.9% of the crop coming from more than 20 thousand producers. Not all fruit grown is processed for orange juice, of course: Of the 405 million boxes (a box contains about 50 oranges) produced in the season of 97/98 almost 100 million were sold at the fresh fruit market, and then passed directly to the consumer for consumption. The other 300 million were sold to the processing industry (Neves, 1999).

Citrus production is considered a very risky crop, both due to the nature of the fruit and the investments needed to establish production. Orange is a perishable product and therefore has to be processed fast after harvesting before it starts losing quality. The distance from orange growers to processing industries results in high transportation costs. Also investments in the land needed for production are risky. Once the investment is made, high installation costs are assumed, and the land will be used for that production for at least 20 years.

FCOJ industry

Like the orange farming industry, the processing industry is a very specific asset because the processing equipment is only able to process oranges and thus this industry also has high reallocation costs if it needs to change activity. Size and scale are important competitive parameters and correspondingly the industry has been subject to a restructuring process, with some acquisitions and mergers taking place in Brazil during recent years (Neves, 1999). One of the main competitive advantages a processing company can have is to own the bulk transportation, where special tank trucks pick up the juice at the industries in the state of São Paulo, take it to private terminals at Porto Santos where it is shipped on special private bulk tankers and brought to private facilities situated at the main European ports. It is obvious that to perform all these activities, the companies must have enough volume, or have strategic alliances. So not surprisingly, given this entry barrier, five industrial groups, Cutrale (24.2%), Citrosuco (21.1%), Dreyfuss (15.4%), Citrovita (Cambuhy) (12.3%) and Cargill (11.6) together hold almost 85% of the market share of exports (1996/97 crop). Cutrale, Citrosuco and Citrovita are Brazilian whereas Cargill is American and Dreyfuss French, and they all sell more than half of their production in Europe. Considering that Brazil has more than 80% of total world exports, these are also the major players in the world. This, of course, strengthens their buying power, since they can buy from a larger number of orange growers, and it also enables them to influence prices in the FCOJ in the market.

Beverage industry

The beverage industry buys the FCOJ from the Brazilian processing companies to process it further and often put a brand name on it. There are a large number of bottlers operating in Europe. According to Neves et al. (1999) as many as 400 companies in Germany and 600 in the rest of Europe. However, none of these companies possess a very large share of the market (Heijbroek 1998, cited in Neves et al., 1999). This makes it one of the most fragmented sectors of the soft drink market, with low margins and a general excess capacity at around 30% in Europe (Neves et al., 1999). However, there are several acquisitions and mergers happening in the industry, with the juice companies becoming part of large multinational companies. For example, Coca-Cola owns Minute Maid, Pernod Ricard bought Orangian in 1981 and Pepsi bought Tropicana in 1998. This reduces the number of bottlers and increases concentration. Brazilian based processor Dreyfuss states that, in their case, there are around 30 bottlers in Germany worth targeting as customers.

Even with the increased concentration in the industry, the top 10 bottlers only had a market share of 36% in 1997 (Neves et al., 1999). The largest bottler in Europe for the moment is Gerber, who was the largest bottler in the UK and then purchased Emick in Germany in 2001. They now have a share of approximately 10-12% of the European market and deal mostly with private label supplies. Eckes-Granini is the European market leader in branded, added-value juices.

The fragmentation in the industry may be due to the low entry barriers both with regard to technology and capital. The physical assets of the bottling industry are not very specific, because they can be used for the bottling of other beverages and also be removed with acceptable reallocation costs. However, being able to handle the logistics process is very important, since supermarkets desire frequent deliveries due to limited product shelf life. Market position also differentiates bottlers. Producers of high quality, branded products face marketing as well as technical challenges related to producing uniform tastes all year round. Also blending and adding differentiation to the product through adding frozen cells and other attributes require some specific skills.

The bottlers perform all the typical marketing channel functions in the chain. They take physical ownership of the product by reprocessing it into different products, giving it a name (in most cases) and handling packaging as well as sales. Providing information to consumers and doing market research also rest with the bottlers, as well as inventory storage, financing and negotiation with retailers. Bottlers are the main link in the value chain where product development occurs. A major source of inspiration for product development are suppliers of food flavours like the German supplier Wild.

Retailers/food service

Retailers and food service are two distinct segments. Retailers account for 85% of juice sales and food service for 15% in Western Europe. These two types of outlets differ in their specific needs with regard to packaging, quality, frequency of delivery, and preferred variety.

One of the main differences between the two sales channels is that while retailers sell branded products, food services normally serve just one type of orange juice, which often is not identified by brand. Despite the lack of branding, juice served by a restaurant or other types of food services can reach the highest final price in the chain. Needs differ not only between retailers and food services, but also between different kinds of food services. Small restaurants, expensive restaurants, fast-food chains and caterers have different needs.

In the same way, food retailing is quite diverse. All kinds of stores are found in Europe ranging from supermarkets, warehouses, discount stores and specialty stores to hypermarkets, street markets and convenience stores. Their needs and focus diverge, which makes it necessary for the suppliers to use customer segmentation, targeting and product positioning when supplying to these outlets. The functions in the channel are therefore shifting as powerful retailers try to transfer some of them back to the beverage industry (Neves, 1999).

Despite the many different types of retailers, supermarkets and hypermarkets remain the most important distribution channels with around 80 to 85% of total retail orange juice sold in Western Europe (Neves, 1999).

Relations between chain members

Between growers and the FCOJ industry

This is the most conflictuous transaction in the orange juice chain (Neves, 1999). Several types of transaction emerge between these two parties, from market governance to vertical integration.

Market governance: Fruit producers and industry make transactions without any kind of contract. Just before harvesting, the growers look for buyers. Given the high asset specificities involved in this transaction, such as locational (industrial units must be near production because of high transport costs), temporal (fruit must be processed fast after harvest because it loses quality), and physical (fruit production areas and industrial plants have high reallocation costs, and are specific for the activity), coordination by market governance results in very high transaction costs in the supply chain. Consequently, very small amounts of oranges are purchased this way. However, some processing companies purchase smaller amounts spot from local farmers. Citrovita, for example, states that 80% of its raw material comes from farmers on contract (including the company's own farm), but sometimes the company can buy the remaining 20% of oranges cheaper spot.

Contracts: This has been the most used coordination practice in the supply chain. One of the advantages of this is that it allows industry and fruit producers to specialize in their core competencies. These contracts are organized individually between growers and industry, where better quality, better location, and volume is rewarded with better prices. There are also pools of fruit growers emerging in order to negotiate together and thereby reaching better prices and conditions. An example of this is the cooperative Monte Citrus which has an arrangement with Citrovita. Strategically it is important for processing companies to have a guaranteed supply of raw material, and for farmers this secures sales two or three years at a time. It also acts as an entry barrier for new processing companies, where the large established processors purchase two, three years in advance, perhaps at a set price, which is not possible for small newcomers who seek to enter the industry.

Toll processing: This form of contracts, which has existed in the industry since 1980, means that growers rent idle capacity of the processing industry and thus go further in the chain, adding value to their product. In this form of contract, the fruit growers sell frozen concentrated orange juice directly to the beverage industry or to distributors instead of selling oranges to the processing industry. The result is that the fruit growers have the opportunity to be a player in the international market, but they also assume, of course, the risks that come with the uncertainty of the market prices for juice. However, normally the industry, which rents the idle capacity to the growers, will be the agent for selling their juice on the market, because to deal in this market requires knowledge and is a very high transaction cost activity for fruit growers.

The advantages to the fruit growers of this arrangement are that the advancement in the chain means incorporating margins, it reduces the dependence on the supply contract with the industry, it enhances quality control, and it gives growers the opportunity to learn about the processing activity and the international market (Neves, 1999). The advantages to the processing industry include a reduction of idle capacity, better guarantees of supply, and a better relationship with fruit growers.

Vertical integration: This happens in almost all the processing companies, though the degree of integration varies. There are industrial units with almost 50% upstream vertical integration, and others (most of them) with 15 to 20% and even zero. Of the big companies, only Dreyfuss does not own any producing farms. Cargill has two big producing farms and Cambuhy (Citrovita) has almost 80% of the fruit needed supplied by the company's farm and by Monte Citrus, which sells oranges only to Citrovita.

Between the FCOJ industry and the bottlers

Bottlers around the world vary in their demand for certain quality attributes. Whereas Florida bottlers may have a demand for a certain colour for blending or a certain viscosity for institutional products and may be willing to pay a premium price for Brazil FCOJ with appropriate colour or viscosity, other bottlers around the world may be willing to pay a

premium for other attributes that can best be supplied by Florida's producers. For example, during the course of a season, a customer of Brazilian FCOJ, somewhere in the world, may demand products with attributes that cannot be satisfactorily supplied by Brazil at that point in time, but could be supplied by Florida. But Florida might not supply this customer simply because the customer channel has not been developed. In this case, a processor with joint Florida and Brazil investments may be able to satisfy such demands. Hence, the capability to match world demand for various qualities with world supplies tends to be better in the case of jointly owned Florida-Brazil companies. Most bottlers mix supplies from various sources in order to serve their own customers best.

While most of the product differentiation takes place at the bottler level, some of it is left to the processor. For example, the processing company Dreyfuss develops and blends different products for some of its customers in Europe. This helps to strengthen the relationship between processor and bottler, since the customer is likely to prefer Dreyfuss as their supplier if they are happy with the blend they supply. And typically if the bottler is satisfied with the specialty products that the processor supplies, the customer is also likely to buy the remaining needed raw materials from the same processing company.

In order to compensate for the considerable differential in market power, some bottlers form coalitions to obtain better conditions in sourcing supplies.

Between bottlers and retailers

Efficient consumer response is used between the retailer and beverage industry in order to reduce transaction costs. When bottlers supply products for retailers' own labels, there is cooperation in terms of providing product specifications and joint product development. Otherwise, the relationship between retailers and bottlers is characterized by the large power differential between big retailers and mostly small bottlers.

At the level of trade associations, there has been some cooperation at the European level, mostly in the areas of quality control and food safety. In some countries, retailers are members of the national associations of fruit juice producers.

Negotiations with retailers can be a tough job according to the Danish bottler, Rynkeby Foods. The company regrets that, despite a climb in the sales of orange juice of 10% per year on the Danish market during the last three to four years, retail prices are falling. The company is faced with competition from very price competitive German companies as well as retailers' use of juice as a loss leader. The company is therefore considering launching new products in the less competitive and more premium category of NFC refrigerated juices (Levnedsmiddelbladet, 2001). Also the large multinational bottlers fight aggressive brand wars, with million of dollars spent on communication of brands like Minute Maid, Tropicana, Danone and Nestlé (Neves et al., 1998).

Power dependence

From the description above it appears that the members of the FCOJ value chain are quite different. The four different actors (growers, processors, bottlers and retailers) that constitute the value chain of orange juice vary in concentration, degree of internationalisation and in number and sizes of companies found in the industry.

The Brazilian producing industry is a domestic industry consisting of around 20,000 growers. The growers sell their crops to, or are owned by, the processing industry in Brazil, which is dominated by five big players. These industrial processing companies are also large players on the international market and many have investments in industrial units abroad, mainly in Florida. The relationship between these two actors is the worst in the value chain (Neves, 1999). It is described as conflictous and as the biggest barrier to improving cost efficiency in the value chain. The conflicts have a number of reasons: from the difference in size and numbers, hence buying power, to natural conflicting interests. For example, it is in the growers' interest that the oranges absorb as much rainwater as possible, hence increasing the orange size. Processors, however, have no interest in this and try to dictate the right point in time to pick the oranges from the tree. Also, growers are poorly organised. In general, growers seem to accuse processors of always looking for the cheapest oranges, and producers accuse growers of switching the customer they supply to for even a small price increase. However, a form of mutual dependence also exists, since it is not unimportant to whom of the five big processors a grower supplies. And some processors are also trying to improve the relationship by investing in more long-term relationships with growers in order to make them more like partners instead of merely suppliers. And finally, the relationship improves during good times, when market prices are up.

The customers of the processing industry are the beverage companies in Europe, which are an industry consisting of a large number of small and a few big companies. Consequently, the large Brazilian processing companies are dealing with a fragmented industry which, in addition, suffers from idle capacity. This places the beverage companies in a difficult situation between processors, who often bargain hard regarding prices and conditions, and retailers, who are very powerful and consequently also drive a tough bargain. In spite of this power imbalance it seems as if the relationship between processors and bottlers is characterized by cooperation and trust and willingness to work together in improving chain management. Unlike most trading in commodities, the relationship between processors and the beverage industry resembles a "normal" supplier-customer relationship, where price is not the only parameter. Long-term contracts are often signed to the benefit of both parties. For example, in a situation of undersupply, it is important for the customer to have a guaranteed supply of oranges (which is a life necessity for a brand manufacturer), and in a situation of oversupply it is useful for the processor to be able to sell its product. Thus, Dreyfuss states that 85% of the company's European customers are the same as the year before and the same volume is supplied as well.

To reach consumers, the beverage industry of course has to go through retailers. The number of beverage companies that exist and the brand war that is fought among the big international

beverage companies make bargaining with retailers difficult. The beverage industry is dependent on the retailers, as they have exclusive control over the scarce resource of shelf space. So there is a power asymmetry in favour of the retailer.

It can be concluded that, when analysing the value chain of FCOJ, it appears that there is a large degree of power imbalance among the members of the chain. Power is concentrated two places in the value chain: at the level of retailers in Europe and at the level of the industrial processing companies in Brazil. However, there are some multinational brand bottlers, such as Coca-Cola, who can stand up to the power of retailers, despite the general fragmentation of the industry.

Characteristics of end users

In general, beverages are conquering "market share" from tap water in covering consumers' physical needs for fluid. In 1997, the estimates were that of a total of 700 litres per person per year, almost 550 litres were beverages (Neves et al., 1998). Of this total amount of beverages consumed, consumers in Western Europe drink around 24 litres per person a year of fruit juices, and with a market of 9 billion litres sold per year; this represents almost 30% of the world's market. Consumers in the Eastern part of Europe, on the other hand, drink only 5 litres of fruit juices per year per person, although consumption grew 80% from 1992 to 1996 (Veeneman, 1999, cited Neves et al. 1998).

Per capita consumption is much higher in the US than in Europe, which some take as an indicator of an additional growth potential in Europe. Also countries in Europe vary considerably in consumption level; some countries like Germany and the UK have consumption levels more than five times higher per capita than in Italy and Spain. The hypothesis is that in countries where consumers eat a lot of fresh fruit, juice consumption tends to be lower.

Consumers in Europe vary by income, which tends to impact the demand for different types of juice, where fresh juice (NFC) tends to be more expensive than juice made from concentrate. Heterogeneous consumer preferences also exist with regard to other attributes. Different markets in Europe vary to some degree on the preferred degree of sweetness (brix) and colour.

The main attributes being used in the development and communication of new products are fresh, nutritional benefits, functional (with calcium, vitamins), natural, low fat, low additives, fibre, country or region of origin. The beverage industry targets their juice-based beverages to specific consumer groups and to different activities, like children, singles, physical exercise, health conscious, adventure and fun. There is also a segment that prefers organic products. Private label is still limited mostly to the UK, where a significant percentage of juice sold is high quality private label juice.

The beverage industry has also come up with ideas for products in attempt to stimulate consumption on other occasions than breakfast. Some of the new products launched include functional drinks (juice based), fruit flavoured drinks, sport drinks, energy drinks, fruit flavoured water, fruit based alcoholic beverages, fruit flavoured milk drinks, fruit nectars, fruit based carbonates, and fruit juice with yoghurt (Neves et al., 1999). However, these products are in some ways also threatening orange juice, since not many new products introduced are “pure” orange juices, which is described as a somewhat “old fashioned product”.

Also the packaging technology is contributing to increase consumption through convenient designs, individual sizes and formats (cartons and cans), vending packs, multi-packs, ambient long shelf life juices etc.; in essence different packaging for different consumer demands.

Regulatory environment

Regulatory environment in Brazil

The Brazilian government does not regulate farming and processing of oranges heavily, although the state of São Paulo is more regulated than the rest of Brazil. There is some environmental regulation with regard to processing, which the industry describes as a minor problem since the only leftover from production is water. Most restrictions on production are self-enforced by the processing industry, since it is important for processors to meet the environmental, ethical and health standards required on their main export markets. Hence, processors and the trade organization set standards for chemicals and fertilisers that growers may use in orange production. The industry even tries to lobby for the government to sanction the use of fertilisers that are banned in Europe.

There are also limits on water usage in primary production, and the use of fertiliser before or under rainstorms is prohibited, since the chemicals wash into rivers and streams. However, there are no laws regulating the amount of fertiliser that can be used, which is believed to be unnecessary given the high price and the limited effect on orange growth.

On the commercial side, there are anti-trust laws and export procedures, which have to be followed. These export procedures are described by the processing industry as very complicated, bureaucratic and as a barrier to export.

Regulatory environment in Europe

The rate of duty on orange juice imported to Europe from Brazil is 12.5% of the processors' selling price. This is comparatively smaller than the duty collected on some other export

markets (up to 50%), but it is also considerably more than the rate of duty put on import from many other orange producing countries. For example, orange juice from Cuba, Mexico and Costa Rica is not taxed when entering the EU.

Within the European Union, the Fruit Juice Directive regulates conditions for products, which are marketed under the name 'fruit juice'. Fruit juice must not contain added colours or preservatives, and the use of flavour ingredients is limited to restoring flavours that were originally inherent in the juice.

Degree of market orientation

Retailers possess information on end users which is based on retailers' sales data (scanner data). Neves and Neves (1999) found that retailers disseminate information upstream in the chain. The information is mostly channelled to bottlers, who like to be in control of the information disseminated by retailers. No direct information sharing takes place between processors and European retailers. An exception is retail chains buying directly from processors such as Carrefour. Occasionally, some bottlers bring representatives from retail chains to the processor's production facility in order to let them inspect the quality.

Large bottlers do their own consumer studies, but many rely on information from retailers, ingredients manufacturers, and juice conferences.

Our informants among processors, the trade organisation ABECitrus and the growers' association in Brazil, suggest that information sharing takes place to some degree, but that there is a widespread perception that much relevant market information is lacking. Processors describe the lack of data on demand as a big challenge. EU statistics are not useable, so AC Nielsen data is purchased in order to be better informed when engaging in negotiations with customers. The bottlers are better informed about demand trends than AC Nielsen is, but AC Nielsen is used in order to have a more neutral source of information rather than relying solely on customers' willingness to share and provide the correct information.

One processor interviewed collects market intelligence (for example on preferences with regard to sweetness on different markets) from the agents working for them in the European markets. This processor also operates a technical department in Antwerp which can visit bottlers when necessary. Another processor interviewed gets information from bottlers by sending the sales force from Europe as well as Brazil on customer visits.

Some bottlers are only buying from one processor, and they are typically willing to share information about their market share and how their products perform in the market. However, bottlers are also depending on information from the processors, because processors are the only source of knowledge on the supply situation in Brazil, i.e. expected crop with regard to size and quality, although according to one Brazilian processor interviewed, the processors do not have the best reputation for giving or possessing the correct information.

With regard to information on supply, there is no official data in Brazil, so processors conduct crop estimates by carrying out tree stripping (oranges are picked from 2000 trees very early in the season and compared with a database to get an estimate of the harvest). Export statistics are not available since the five big processors in Brazil are reluctant to supply their trade organisation with these figures, out of fear that it may benefit their competitors. One processor interviewed indicated that the company makes an effort to inform orange growers on how much the company intends to buy from them and also to supply technical information on e.g. plant care and disease control. This is also described as being in the best interest of the processor, given the corresponding improvement in the quality of the raw material.

Conclusions

Orange juice products on the shelves of European supermarkets are a differentiated product category. This applies to juices regulated by the Fruit Juice Directive, and to an even higher extent to the large market of juice-based products. It seems reasonably safe to conclude that this product differentiation is an indicator of responsiveness to heterogeneous and dynamic consumer demand. This responsiveness takes place mostly at the bottler level. It is related to market intelligence generated by the bottlers themselves and by retailers; the latter being disseminated upwards to the bottlers. Bottlers also receive information from flavour producers, and they stand for most of the responsiveness in terms of the development of new products.

There are certain signs of some of the market intelligence being disseminated further upwards to the processors. This has the result that also processors take a share in market responsiveness by differentiating the concentrate supplied to bottlers. However, most of the operation of processors seems to be unaffected by market intelligence other than information on prices and quantities. Growers receive by and large no information on end users and do not take part in being responsive to heterogeneous and dynamic end user demand. The value chain hence has market-oriented characteristics, with market-oriented activities concentrated in the lowest part of the chain, i.e. with bottlers and retailers.

In trying to explain this characteristic of the value chain by our framework, we can first rule out regulation, since it does not play any major role in the orange juice value chain. We are thus left with the existence, perception and exploitation of heterogeneity and dynamics of end user and supply markets, and the relational characteristics of the value chain.

The case indicates that end user demand is heterogeneous and dynamic. It further indicates that both retailers and bottlers perceive this heterogeneity. It also indicates that there seem to be no hold-up problems preventing bottlers from trying to take advantage of the possibilities of product development and differentiation. This may be related to the fact that the investments incurred by bottlers are relatively modest. The case further suggests that there is

a certain degree of information exchange and even trust and commitment between retailers and bottlers, in spite of the highly asymmetrical power relationship between these two actors. All these aspects are in conformity with our framework.

What remains to be explained is why the upper parts of the value chain do not seem to be involved in market-oriented activities, i.e. activities that contribute to exploiting heterogeneous and dynamic consumer demand. A possible explanation would be that the raw material is homogeneous and hence all product differentiation has to be done downstream by adding value. However, this is not the case. Oranges exhibit heterogeneity, and more importantly, certain aspects of this heterogeneity seem to be related to differences in end user preferences, like amounts of sugar and acidity. In explaining why this heterogeneity is not exploited in a market-oriented way, we can resort to the relational characteristics of the upper part of the chain. The relationships between growers and the FCOJ industry are characterised by a lack of trust and commitment, little information exchange, and high power asymmetry. The relationships between the FCOJ industry and bottlers has more trust/commitment and information exchange, but is likewise characterised by high power asymmetry. The upper part of the chain, from growers via processors to bottlers, is characterised by a lack of traceability and possibilities for segregation.

In such a situation, it seems obvious that a market-oriented exploitation of raw material heterogeneity would require that the dominant member of this part of the chain, the processing industry, would take the initiative to make the necessary investments in equipment enabling segregation and traceability, and simultaneously establish stronger links to growers. Given the power dominance of this channel member, it seems unlikely that such investments are not occurring due to hold-up problems. It seems likewise unlikely that the heterogeneity in the raw material is not perceived. The most likely explanation, based on our framework, is therefore that decision-makers in the processing industry do not believe that heterogeneity in raw material can be profitably exploited by linking it to heterogeneous and dynamic consumer demand. The current system, where heterogeneity is taken out in primary processing and partly re-established by blending and adding flavourings in secondary processing, may indeed be the most cost-efficient way of filling heterogeneous consumer needs.

LAMB MEAT FROM NEW ZEALAND⁴

Background

New Zealand is a world leader in the farming of sheep meat and does this without the assistance of government subsidies. Meat export is a significant contributor to the economy of New Zealand, though the export faces quota restrictions and other trade barriers. In response to this, New Zealand farmers, meat processors and exporters have become the most efficient in the world. Each year, approximately 30 million sheep are efficiently processed and sold to customers in over 100 markets worldwide. Australia and New Zealand represent around 90% of exports globally.

“New Zealand Lamb is seen as a market leader, and despite the food and animal welfare scares that have affected meat consumption right across Europe over the past 12 months, there has still been good consumption demand for our lamb. This reflects the efforts that have gone in over many years to emphasize the values and positive attributes of New Zealand as a country of origin and as a reliable supplier of top quality products”. (Meat New Zealand informant)

New Zealand has a trading history of almost 120 years of exports to Europe. The European sheep meat market remains of fundamental importance to the New Zealand industry. The EU is the target for over 50 percent of New Zealand’s sheep meat exports and is the source of some two thirds of NZ’s sheep meat export returns. Exports include lamb, mutton and a very small volume of goat meat. The most important markets in Europe are England, Germany, and France, as shown in table 11.

Prices for mutton and lamb are expected to firm up during the next five years, and the sheep meat production in net importing countries is expected to fall faster than consumption. Falling lamb production and continued promotion have seen lamb emerge as a well-established premium food category. The New Zealand sheep meat industry will benefit significantly from the international supply shortage for sheep meat, mainly through higher prices. Assisted by this growing scarcity, lamb has developed increasingly as a specialty, premium food product. As a result it has outperformed other meat types in terms of price trends.

Lamb comes in two forms – chilled or frozen – and especially the chilled lamb export has increased in recent years, though it is a very sensitive issue for the politicians in the EU. Sheep meat has lagged behind other food types in responding to changing consumer trends,

⁴ We would like to thank the following for spending time in interviews with us and helping us in preparing this case: Grant Cunningham at Taylor Preston Ltd., Chad Brown at Horizon Meats New Zealand Ltd, Neil Clarke, General Manager R & D at Meat NZ, Gair Mcskimming at Wilkinson foods International Export Limited.

like trends towards more convenience-oriented, varied and healthy food. According to the industry, several new product forms have emerged on the markets, though: rapid-cook cuts, cook from frozen product, marinated products and the use of sheep meat in ethnic ready meals. Table 12 illustrates the shift towards more elaborated products from 1990 to 2000.

Table 11: Export to the EU in tons, product weight

<i>Country in the EU</i>	<i>Meat Shipment 2000</i>	
	Lamb	Mutton
United Kingdom	70,323	12,457
Germany	22,630	6,838
France	19,387	1,768
Belgium	13,789	2,298
Greece	6,984	1,509
Italy	6,194	28
Spain	4,044	194
Portugal	3,158	
Netherlands	2,297	1,149
Denmark	2,081	63
Sweden	1,634	147
Austria	336	18
Finland	189	458
Ireland	15	127
Total	153,151	27,051

Source: Meat Industry Association, Meat NZ

Table 12: Lamb processing, production and value, 1990-2000

	1990	1995	2000
Frozen carcasses (% of total export lamb)	50	30	15
Bone-in-cuts (% of total export lamb)	50	68	80
Boneless-cuts (% of total export lamb)	0	< 2	5
Chilled lamb (% of total export lamb)	5	10	15
Sheep numbers of in NZ (million)	55	-	45
Average lamb carcass weight (kg)	13,5	15	16
Value NZ\$ billion (fob)	0,9	1,2	1,6

Source: Meat Industry Association, Meat NZ

However, when talking to one of the biggest retail chains in the UK (the most important European market), one gets the impression that new product forms are almost non-existent within the lamb meat category. The industry is characterised as “not very innovative”.

Moreover, new product development does not seem to be very important for the retail chains in the UK. What they find to be essential are things like a close relationship with suppliers, animal welfare, traceability and food safety.

New Zealand has a finite amount of products available to export to markets around the world, and if more is put into one market it has to come out of another. Likewise, if New Zealand sends more early in the season, it will only mean there will be less to send later.

Characteristics of raw material

Production. New Zealand sheep are raised on their natural diet – grass – in a free-range natural environment. Pastoral farming is successful in New Zealand because of the temperate climate allowing the sheep to be kept outdoors all year, without needing much extra feed. Relying not only on the climate, the farmers sow grass species that grow well on their particular farms, they apply fertilizer and in dry areas they may irrigate their pasture during periods when rainfall is scarce. Growth promoters are prescription animal remedies and are not licensed for use in sheep. Antibiotics are not generally used, except occasionally to treat disease. The pastoral farming varies from the Northern to the Southern area of New Zealand due to the different formation of the land. The North is characterized by lowlands and flat plains, whereas the South is a highland area providing different conditions for the growth of the grass for feed. Variations are dictated by geography rather than climate, with some sheep being better suited to the rugged highlands and other more at home on the plains.

Disease. The geographic isolation and the strict quarantine laws of New Zealand have kept the sheep flocks free of all major diseases. New Zealand has never had a case of foot-and-mouth disease and is free of scrapies and other transmissible spongiform encephalopathies such as bovine spongiform encephalopathy (BSE).

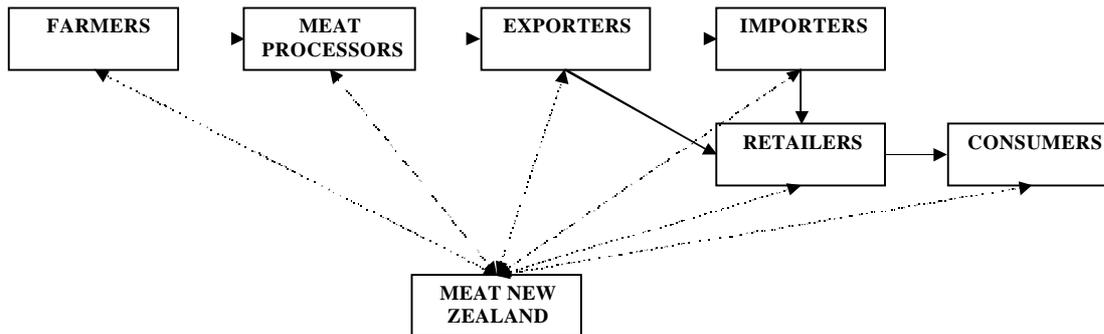
Quality. Lamb quality has been refined through genetic selection and improved production methods. This has been coupled with product development and promotional programs which, according to the NZ lamb industry, aimed to position lamb as a quality nutritious and quick to prepare product. As mentioned above, there seems to be quite a difference though in the perception of the level of product development among the upper (farmers and processors) and the lower part (retail sector) of the lamb meat value chain. Moreover, the retail sector does not seem to be fully satisfied with the lamb meat from NZ. TESCO puts it this way:

“Concerning animal welfare, food safety, production standards and traceability, the NZ lamb industry does not perform as well as, e.g. we in the UK. However, they have improved along with us working with them”.

Characteristics of the value chain

Configuration

Figure 7: The NZ lamb value chain



Actors

Sheep farms

New Zealand consists of two large islands, called the North Island and the South Island, one smaller island and hundreds of tiny islands. In the North Island, sheep are reared with beef cattle on the rolling lowlands and low to high hilly country and on the flat plains of the southern parts of the North Island. In the South Island, on the high hill country land, where the tussock grass is not a rich feed, sheep are reared sparsely on large farms called stations. In the lower areas of the South Island, sheep are farmed more densely and on some hill country farms, beef cattle are reared together with sheep. New Zealand sheep farmed on lowland farms are usually crossbreeds developed to produce both high-quality meat and wool.

The average farm is 225 hectares. The North Island hard hill country and the South Island high country farms are extensive run holdings: they earn a significant amount of their income from wool. The high hill country farmers in both islands are less extensive and earn a greater proportion of their income from meat production. Intensive finishing farms (or mixed farms) earn income from meat, cash crops and wool.

New Zealand farmers are extremely technically competent with regard to areas like grass types, farm management techniques and genetics. In addition, being a pasture-based farming,

export-focused nation, the New Zealand farmers need to have the ability to not only contend with the vagaries of nature, but also with the politics of international trade. Some of the critical factors that farmers have to respond to are:

- Droughts
- Floods
- Transport costs
- Exotic disease outbreaks
- Global demand
- Animal welfare expectations
- Imposition of tariffs and quotas

Meat processors and exporters

More than 150 New Zealand meat companies are licensed to operate and thus to export. The four largest players in the New Zealand meat export industry include:

Richmond (www.richmond.co.nz). Over the past four years a series of strategic mergers and acquisitions has seen Richmond become New Zealand's largest processor and marketer of meat and meat-based products. From its fourteen plants spread throughout the North Island, the company processes beef, lamb, venison, veal, goats, leathers and a wide range of associated products. Richmond coordinates procurement, processing and export activities for major world markets, including North America, Europe/UK, Asia and the Middle East from its head office in Hawke's Bay. Richmond has nine sales and marketing offices throughout the world.

PPCS Ltd (www.ppcs.co.nz) is a fully integrated marketing company and provides a full range of lamb, beef, venison and allied products. Based in Dunedin, PPCS owns and operates 13 processing facilities covering the whole South Island of New Zealand. PPCS started in 1947 as a marketing company, established by a group of farmers intent on direct marketing. Today, PPCS has 12,000 supplier/shareholders.

AFFCO (www.affco.co.nz) is processing and exporting more than 150,000 tons of beef and lamb products every year. The company operates eight processing sites across the North Island of New Zealand. AFFCO is represented on all major markets through a network of eight overseas offices and five joint venture companies. AFFCO is listed on the New Zealand Stock Exchange. About 70% of its shareholders are the farmers that supply their lamb and beef to the company.

Alliance Group (www.alliance.co.nz) is a farmer owned producer co-operative based on the South Island of New Zealand. Its principal activity is processing and marketing lamb, sheep, beef, venison and pork products. The company operates seven processing sites throughout the South Island and its corporate office is based in Invercargill. From its foundation in the

1950's, the company has developed extensively and is now one of the largest exporters of meat products in New Zealand.

An example of a medium sized company is **Taylor Preston Limited** (www.taylorpreston.co.nz) which is a privately owned meat slaughter, processing and export company situated in Ngaraunga Gorge near Wellington, New Zealand. The company was established in 1991 when the Taylor and Preston families purchased the former city abattoir. Over 1,300,000 small animals are slaughtered on the sheep and lamb chain and the annual turnover is approximately NZ\$ 200 million. Most of the products are exported under the Taylor Preston logo and brand. Chilled products are sent by sea and air to Canada, Japan, Switzerland, UK, USA and France. Frozen products go to areas such as the Middle East, Asia, USA, Australia, South Africa, the Pacific Islands, Mexico and Spain. C R Grace Limited procures and arranges the delivery of all livestock for processing at Taylor Preston. The company has livestock agents geographically spread around the lower North Island and one in the South Island.

The general picture of the meat processors is that they are economically squeezed between the farmers and the retailers at the end user markets. Falling lamb production has put the farmers in a more favourable position against the processors and they have been able to increase prices on the raw material. At the other end of the value chain, the concentration of retailers has resulted in increased bargaining power. Richmonds, for instance, recorded a loss after tax of NZ\$6.5 million for the year ending 30 September 2002. Total revenues were NZ\$1.315 billion. They stated in their annual report:

“The 2002 performance was also in sharp contrast to that enjoyed by most of Richmond’s farmer suppliers, who benefited from strong end-product pricing and a competitive procurement market for most of the year. The 2002 financial year was challenging for Richmond – and ultimately disappointing.” (Richmond Annual Report, 2002)

The annual report of another leading processor, AFFCO, stated that:

“The 2001/2002 financial year has been another busy and eventful period for AFFCO, dominated by the ongoing review of all aspects of the company’s operations. Against the background of softening international beef markets, a strengthening dollar and a fiercely competitive environment in the North Island processing industry, AFFCO has now substantially completed its major restructuring programme. (...) It is disappointing to report an after tax loss for the full year of \$12.3 million. Clearly this does not represent an acceptable return for shareholders.” (AFFCO Annual Report, 2002)

For the processors, capacity management of a standard product drives lamb (meat) business. Since the processor does not control the price, potential profit comes from efficiency. The trend is for more cuts and smaller portions instead of whole carcasses. To the processors, this represents the only opportunity to make more money. The situation in the NZ meat

processing industry is comparable to that of the Norwegian fillet processing industry. The weak economic output has resulted in a more consolidated industry (through acquisitions and closing down businesses), with some larger players and a number of smaller processors.

Most meat processing companies in New Zealand have developed quality assurance programs that incorporate standards relating to on-farm practices. These programs are independently audited, providing consumers of New Zealand lamb with assurances on such things as environmental sustainability, traceability, animal-welfare and food safety.

New Zealand's meat processing plants are required by the industry and the Ministry of Agriculture and Forestry to meet the following standards:

- Inspection of export meat by government-approved veterinarians and meat inspectors.
- Processing in a temperature-controlled environment of below minus 10 Celsius.
- Fastidious levels of cleanliness at all stages.
- Product refrigerated within 30 minutes of processing.
- Chilled cuts being rapidly chilled and stored at $-1\text{ C} + 0.5\text{ C}$.
- Temperatures controlled and monitored by automatic sensing equipment.
- Regimes for tenderness control.
- Specifications for fat cover, trim packaging and label integrity.

New Zealand's government-administered and audited meat inspection regime meets international hygiene standards. Under the control of the Ministry of Agriculture and Forestry's Regulatory Authority (MAFReg):

- Meat inspectors check each carcass to ensure the meat is free from disease and fit for human consumption.
- Inspection is done at various points through the processing operation.
- Any product that is detained as not meeting hygiene standards is strictly separated from other products.
- Temperatures within the processing plant are set at levels that inhibit the growth of harmful bacteria.
- Throughout the process, chilled lamb, the most sensitive product, is stored and handled separately from lamb that is to be frozen.
- Meat is regularly sampled for indicator organisms (salmonella, coliforms, total plate counts)
- Further laboratory testing is done where necessary

In some New Zealand meat processing plants, the microbiological testing records go more than 20 years back. This extended testing history backs New Zealand's claim to have very clean and safe meat. A New Zealand meat-processing plant is supposed to be a strictly controlled, clean environment, where everyone handling meat at any stage must meet strict hygiene requirements. The plants are open to inspection, not only to government officials from customer countries, but also by customer representatives and on occasion by supplying

farmers. Processing plants must be built of materials that can be cleaned completely between each working shift. Among other protective measures, temperature controlled rooms and air curtains are often used to prevent movement of airborne bacteria between work areas.

Meat New Zealand – The New Zealand Meat Board

Meat New Zealand is funded by the farmers through a levy on all beef, sheep and goats slaughtered in New Zealand. The three main objectives of Meat New Zealand are:

- To increase the preference for New Zealand beef, sheep and goat meat internationally and domestically.
- To maintain and extend trade access for New Zealand red meat.
- To fund research and development to help improve the profitability of New Zealand farmers.

Meat NZ is not involved commercially in selling New Zealand meat, but is working closely with farmers, exporters and processors in the generic marketing of New Zealand. Meat New Zealand has made an effort for many years to emphasize the values and positive attributes of New Zealand as a country of origin and as a reliable supplier. Basically, Meat New Zealand is the farmers' 'policeman' ensuring that the farmers get the right price. Meat New Zealand assists the country's export industry to achieve the maximum returns possible from its meat products through:

Trade advocacy and access
Quota administration
The provision of industry statistics
Research and development
Export licensing
Generic marketing

Trade advocacy and access. Meat New Zealand aims to build an increased understanding among the industry's overseas partners of the industry's unsubsidised nature and fair trade objectives. Furthermore, it is integrally involved with industry and government in analysing and addressing trade barriers and distortions affecting New Zealand's sheep meat exports.

Quota administration. In accordance with the Meat Board Act of 1997, Meat New Zealand has established and operates allocation systems for four country specific tariff rate quotas for export markets having tariff rate quotas to be administered by New Zealand. The role of Meat NZ is recognized in the appropriate EU legislation. Prior to each year, Meat New Zealand makes quota allocations to qualifying companies and new entrants.

Industry statistics. Meat New Zealand provides statistical services for industry planning and the development of trade policy and in-market activities.

Research and development. Meat New Zealand's Research & Development Services are funding a wide range of projects together with the meat industry. The Directory of Projects 2000-2001 shows that the following research areas were prioritised: productive efficiency, growth rate, animal health and welfare, food safety, meat quality, processing efficiency and information transfer. Actual expenditure was NZ \$ 8,1 million. All research areas are related to "on-farm R&D". No market research projects have been identified, indicating that market research is the single actor's responsibility, not an industry issue.

Export licenses. Meat New Zealand licenses meat companies to export to markets all over the world in accordance with the Meat Board Act of 1997.

Marketing. As third country suppliers of sheep meat to the EU, New Zealand exporters and processors are sensitive to the European trading environment. Meat New Zealand, through its offices in Brussels, London and Wellington, monitors matters that have potential to affect New Zealand's trade position. Recently, such issues have included the Common Agricultural Policy (CAP) reform, proposed reform of the common market organization in the sheep meat and goat meat sector, chilled sheep meat exports, EU enlargement, standardization of documents of origin, beef labelling, livestock and meat traceability, organic productions, genetically modified organisms and animal welfare. Fresh (chilled) lamb remains a matter of sensitivity with EU producers.

Importers

There are four categories of importers of New Zealand lamb. These are wholesalers, traders, retailers, and further processing/repackaging plants. Three examples illustrate the diversity among the customers of New Zealand lamb. The top-four exporter AFFCO's most important customers in the UK retail market include supermarket outlets such as Marks and Spencer, Sainsbury's and Waitrose. About half of Taylor Preston's turnover comes from the catering market and the other half comes from the retail market. Horizon Meats New Zealand, a medium sized exporter, has a range of customers including HRI distributors, processors, supermarkets and caterers.

Retailers

Basically, all retail chains plus most independent grocers and butchers in the UK sell New Zealand lamb.

TESCO, the biggest retailer in the UK, buy their lamb meat only through UK importers and has no direct contact with the NZ part of the value chain. Lamb is not regarded as a product where innovation, adding value and differentiation are very important – safety, traceability and animal welfare are regarded as more important. Communication about lamb directed at

consumers is often done in cooperation with the Meat and Livestock Commission, which is also a provider of consumer research.

Relations

Between farmers and processors

Here trade is based on demand and supply with prices being set weekly. Most often there are limited personal contacts between processor representatives and the farmers. The processors have “outsourced” the purchasing function to specialized trading agents, who are travelling around buying animals on the processors’ accounts. The minimum prices are set on the basis of the exchange rate and the market price of end products by the processors. This price is made public in the newspaper once a week. Hence, the market is very transparent. Furthermore, the processors pay for the transportation of the animals from the farmers to the plant. Within this system long-term contracts are rare, but we see some effort made to strengthen the relationships between farmers and processors. Richmonds, for instance, has developed a contract system aimed to maximize returns to farmers by integrating market and processing requirements with livestock procurement. AFFCO employs over 48 livestock buyers and is represented throughout the North Island. These buyers are regularly visiting their farmer clients. The AFFCO Lamb Plan 2002 illustrates processors’ efforts to strengthen the relationship to the farmers. To participate, farmers had to consign a minimum of 50 lambs for slaughter. The farmers were not required to make a written commitment. The plan also included payment of additional rewards for accredited supply on a week-by-week basis (10 cents per kilogram), and they received priority of slaughter space at all times.

Summing up, the trust in the business is best described as one where relations count if the same price is given by all processors. The traceability of the product is high, but the processors hold the cost of auditing this.

Between processors and exporters

The main configuration of the chain is that processors are exporting a large share of their products through their own channels. The quantities exported by independent traders are too small to have any significant impact on the relations in the value chain.

Between exporters and importers

With the large importers, the relationship is based on outlined contracts and personal relations, whereas only personal relations play a role with the small importers. For all parties,

price is the main concern. Trust between the parties is reflected in rebuying from the same source. The relationship is centred on a standard product, so the crucial parameters in the transaction are cuts, delivery time and amount available. But between the importer and the exporter, the relations can be very personal, especially with smaller importers. If a person changes company, the contract follows the person, not the company. If the importer is a retailer, then the relationship is more formal and contractualized than for smaller importers.

Between importers and retailers

TESCO describes their relation to the importers as close, quite open and based on contracts. There is a limited degree of cooperation with regard to new product development, and in-store communication may be done in cooperation with a supplier. There is a good degree of information exchange between retailers and the UK part of the value chain, but it rarely deals with information about consumers.

Power dependence

In the relationship New Zealand–Europe, Europe holds the power due to the quota barriers upheld by the EU. Furthermore, the significant contribution of EU lamb consumption to New Zealand’s export returns stresses the dependency of New Zealand on the EU market.

In the relations between the NZ farmers and the processors/exporters, one gets the impression that farmers are the strongest part. Comparable to the Norwegian cod case, the processors are squeezed between a limited supply of lamb and the power of retailers and caterers. The economic output from the processors is around zero. Several of the largest processors/exporters are partially or fully controlled by the farmers (for example the Alliance Group, AFFCO, PPCS). From a farmer’s perspective, the most profitable behaviour is therefore to allocate most of the market return back to the farm by means of fierce competition at the procurement market.

From the retailer’s point of view, there is a fairly even balance of power in the value chain. TESCO puts it this way:

“We are all interdependent on each other and I would say that there is a fairly even balance of power in the value chain. The industry is market driven and the market drives the price. I don’t feel we hold more power – we are very dependent on the supply situation – there is only a certain amount of meat and if the suppliers decide to sell more to France, there will be less to UK and the price goes up”.

Characteristics of end users

The complex region of Europe comprises over 500 million consumers in more than 33 countries, virtually all of which receive New Zealand meat. The European consumers are concerned with safe food production, and prefer fresh over frozen meat in retail.

Attributes when selling New Zealand lamb have been country of origin, low fat, nutritious, taste, consistent quality, and natural farming system. Consumers regard New Zealand as a safe country of origin. The main target for public relations activities has been the high income and well-educated 35+ age group that currently eats very little lamb (at least in Germany).

Concerning the English consumers, convenience and health consciousness are major trends, and at the same time there is no tendency towards eating less meat in the UK, in spite of surveys on consumer intentions claiming the opposite. Lamb meat mainly has an older consumer profile – more than 80% of lamb sales go to people over 30, who do not demand so much innovation. Lamb is expected to grow in the future, but the growth is considered dependent on the livestock market.

Regulatory environment

The current regulatory framework for the import of New Zealand sheep meat to the EU was established in the multilateral negotiations that concluded in 1994 and are now bound in the World Trade Organization (WTO). This agreement is expected to remain in place over the next five years. This agreement limits in-quota imports to 226,7000 tons carcass weight equivalent at a zero percent import tariff. Import volumes in excess of this are subject to duties at 12.6% plus a fixed levy per 100 kg depending on the cut of the current year.

Importation into the EU of sheep meat and goat meet under tariff rate quota requires a Document of Origin (DOO) issued by Meat NZ.

The European Union requires adherence to stringent meat hygiene standards to allow third country exporters to send meat there. Exporters and processors have invested to upgrade their facilities, and EU veterinary inspectors regularly visit NZ plants to check that the standards are being met. New Zealand was the first country in the world to conclude an equivalency veterinary agreement with the EU.

Degree of market orientation

Retailers possess information on end users which is based on retailers' sales data (scanner data). There is a fairly high degree of information exchange between retailers and the first

part of the value chain, i.e. importers. For example, TESCO has good collaboration with the UK processor Bernard Matthews. Beyond that, there do not seem to exist notable degrees of exchange of information about consumers with the upper part of the chain. From the retailer's point of view, the NZ sheep industry is, in this respect, very closed. They do not share any information and neither does the information go the other way (from retailer to NZ).

Meat New Zealand does generic marketing with the purpose of increasing consumer awareness of New Zealand as a safe country of origin. However, there is little indication that they collect information about end users and distribute it to the rest of the industry. The NZ actors in the value chain focus on efficiency and engineering issues, and information exchange with partners in the value chain is restricted not only formally but also substantially to their immediate partners. Meat New Zealand also focuses on engineering and trade issues; there seems to be no form of active generation, dissemination and response to end user information.

Conclusions

Most of the lamb meat that finds its way to the cooling and freezing disks of European supermarkets is a relatively standard product. The product is naturally differentiated by various cuts from different parts of the animal but beyond that, the innovativeness of the value chain in terms of new or differentiated end user products seems to be limited. There are exceptions, though, most notably the chilled meat product category.

We found only limited signs of market orientation. Information about end users, to the extent that it is generated at all, is generated and exchanged in the lower part of the value chain. There is a strong trade organization, but it does not seem to engage very much in generation and dissemination of intelligence on end users. Hence, the degree of market orientation in the chain is limited.

Our framework hints at several possible explanations for this. A first possible reason is that end user demand is actually neither very heterogeneous nor dynamic, and hence there is no incentive to be market-oriented. In the absence of solid data on consumer preferences in this area, we can only speculate on this matter. The fact that the sector believes that most of the meat goes to older consumers could support the notion of conservatism in the core target group. On the other hand, there have been general developments affecting all kinds of meat, not only lamb, which may point in the opposite direction. Though lamb has not been affected by the type of crisis and food scares, which affected beef (and to a lesser extent pork), one would expect that the demand for lamb has been affected in one way or another. The attitude in the sector seems to be to wait for the positive effects these developments have on demand for lamb without actively exploring them. In addition, demand for meat is affected by the general demand for convenience, which introduces an element of dynamism and which is known to affect different consumer groups in different ways, thus also introducing

heterogeneity. Homogeneous and stable consumer demand is thus not likely to be the only explanation of the relatively small degree of market orientation of the chain.

Regulation appears to be an important factor. EU regulations have focused producer attention on issues about hygiene and safety, and away from issues about differentiation. Also, the quota system may encourage thinking in terms of quantities and bulk, and it seems that political considerations may have been a factor in delaying the development of the major invention in recent years, the chilled meat. On the other hand, though, since the quotas are volume quotas, they could also encourage attempts to increase business by providing more value per kg. One way or another, regulation will have affected the predominant way in which actors in the chain have perceived options for doing business.

The relational characteristics of the value chain do not encourage the dissemination of information on end users. While personal relations play a role in certain links in the chain, especially between exporter and importer, the relationships are mainly governed by market transactions with little provision for segregation and differentiated products.

The market-oriented activities that we found were concentrated in the lower part of the chain. According to our framework, this should indicate a relatively homogeneous raw material supply. Indeed we find that much effort in NZ sheep farming has gone into producing a consistent and stable quality, counteracting the natural variation following from, for example, the variation in natural conditions on the North and South Island. Still, an animal has many different parts, and commercially successful animal production requires being able to sell most parts of it. Market oriented activity throughout the chain should enhance possibilities for optimal exploitation of the raw material, because information on end users should provide for better ways of matching consumer groups on different markets with the various parts of the animal, as well as generating responsiveness concerning the various ways of adding value which would have to follow the cutting up of the meat.

Finally, we should note that the competitive pressure on the chain has been relatively weak. Since there is a limit to total production in NZ, and since the mechanisms of global sheep meat demand and supply have been working to the advantage of NZ, the chain may not have been under high pressure to develop a high degree of market orientation.

DISCUSSION

In the present work, we wanted to extend the concept of market orientation from the single company to the value chain. We retained the definition of Kohli and Jaworski, which defines market orientation as a set of activities, dealing with the generation, dissemination, and response to market intelligence about current and future customers. In applying this definition to a food value chain, we have defined the market orientation of the chain as the generation of intelligence about current or future end users, the dissemination of this information among chain members, and the chain-wide responsiveness to it.

Market orientation defined in this way is a matter of degree. Although we do not have a quantitative measure of market orientation, we got the clear impression that the degree of market orientation did vary across the four cases investigated.

One of the main determinants of the degree of market orientation, according to our framework, is the extent of heterogeneity and dynamism on end user markets. Our cases do not provide unequivocal evidence on this, because all four end user markets we looked at seem to exhibit heterogeneity and dynamism. If we do venture a categorisation, though, we would argue that the bacon and cod end user markets were more heterogeneous and dynamic than the juice and lamb markets. Correspondingly, it is our impression that the degree of market orientation of the chains mirrors this difference. We thus maintain our proposition that the extent of heterogeneity and dynamism on end user markets is a determinant of the degree of market orientation of the chain, although many other factors confound the picture.

Market oriented activities were mostly concentrated in the lower parts of the chain. This is not surprising, given that the more we come down in the chain, the more value is added, and the more parameters decision-makers at that link in the value chain have to consider. This results in a stronger need for end user intelligence to base decisions on. Also, in the process of adapting a raw material to different demands of heterogeneous consumer groups by additional processing, the lower links in the value chain will typically play a larger role, resulting again in a stronger need for end user intelligence in the downstream part of the chain.

There were clear differences, though, in the extent to which end user intelligence was disseminated further up the chain, and in the extent to which responsiveness was not only concentrated downstream, but also distributed more equally across the chain. In explaining such differences, we expected the heterogeneity and dynamism of the raw material supply to play a major role. The more heterogeneous and dynamic the raw material, so was our argument, the more there will be a need for end user intelligence already upstream in the value chain, either for reducing the heterogeneity according to end user based criteria (if end users are homogeneous), or for exploiting the heterogeneity by matching it with heterogeneous end user demands. This expectation was not borne out in the cases. In all four cases, there was a strong drive to make the raw material as homogeneous as possible. In the bacon and lamb cases, the raw material has already a high degree of homogeneity due to a

long history of breeding and quality control in primary production. In the orange juice case, the heterogeneity of the raw material is taken out in primary processing. In the cod case, heterogeneity is first ignored and then, for a large part of the production, taken out in the production of frozen blocks.

This strong drive towards homogenisation of the raw material could reflect homogeneous end user demands, suggesting that the criteria according to which the raw material is made homogeneous are market-oriented. That seems to be historically true at least for bacon production in Denmark. However, in all value chains we now find, to different degrees, activities further down the chain which have the opposite aim, namely to reduce homogeneity of the product by differentiating the product so that it can meet differentiated end user demand. This was most pronounced in the orange juice case, where some of the heterogeneity, which was taken out in primary processing, was restored in secondary processing. It also occurs in the bacon chain, where desired homogeneity with regard to fat percentages in primary production are balanced by a choice of standard and lean bacon products at the end of the chain.

It is possible that this chain organisation, where heterogeneity is first reduced and later reintroduced, is actually the most efficient way of serving heterogeneous end user needs. Preserving heterogeneity upstream will normally lead to increased costs for segregation and possibly traceability, and when heterogeneity can be restored further down in the value chain without loss of value in the eyes of the end user, then homogenisation further up in the value chain may be the most cost effective way of serving end users. However, other factors may play a role as well, and our cases provide strong hints at the importance of chain configuration.

Of the four cases investigated, the bacon chain scores highest in the dissemination of end user information upstream in the value chain, and also in responsiveness all the way up to primary production, in spite of the strong tradition for a homogeneous raw material. Our framework suggests three factors that may be responsible for this. First of all, this chain was, among the four cases, clearly the shortest one with the strongest relations among the links. The first three actors in the value chain (farmers, primary and secondary processors) are strongly vertically integrated because of the cooperative organisational form. This block of actors deals directly with the last link in the chain, namely retail chains on the UK market. Secondly, the chain had the most balanced power relation, with something close to power equilibrium between the Danish pork sector and the UK retailers. Thirdly, there was a strong trade association, contributing to the generation and dissemination of end user intelligence.

In sorting out these factors, we can first note that two of the other cases also had either a strong trade association (lamb) or a set of semi-governmental bodies performing similar functions (cod). In the lamb case, the trade association seemed to a much lesser extent to engage in activities that we would classify as market oriented. In the cod case, the various organisations do engage in some market-oriented activities, but these activities do not seem to result in a high degree of responsiveness to end user demands in the upper part of the

chain. Our proposition, therefore, is that trade associations can make a major contribution to the market orientation of the chain, but that it can be moderated by other factors.

Looking closer at the power balance, we had another case, the juice case, where two powerful actors, namely retailers and primary processors, dominated the chain. Still, this chain was very different from the bacon case, in that the bulk of market oriented activities seemed to be carried out by the secondary processors, which are fragmented and certainly not the dominant member of the chain in terms of channel power. Our preliminary proposition is therefore that only balanced (in terms of power) and short chains increase market orientation.

We are not in doubt that relational characteristics facilitating information exchange and creating trust and commitment are major factors in bringing about market oriented activities, especially the dissemination of end user information upstream in the chain, and upstream responsiveness to end user heterogeneity. Trust and commitment create openness, which helps the exchange of information, and it reduces hold up problems, which may otherwise prevent upstream chain members from engaging in differentiation activities requiring segregation and traceability. We therefore retain our proposition that relational characteristics are a determinant of the degree of market orientation.

Relational characteristics, which allow information on end users to travel up the chain, are also a prerequisite for making market-oriented use of the heterogeneity which exists in the raw material. If such information is not available, market-oriented exploitation of heterogeneity and market-oriented value adding are not possible, and the most likely result is a tendency towards homogenisation of the raw material, as we observed in the juice and cod cases.

We found some evidence on the role of regulations. This was most pronounced in the cod case, where regulations seem to make market-oriented product differentiation upstream more difficult. Regulations also played a role in the lamb case, although the impact was much less clear, as discussed in the case. We got the impression, though, that regulations might have an indirect effect as well, namely by having an effect on the prevalent mental models of decision-makers in the chain. Since volume quotas are so important for lamb exports, it may encourage mental models that put priority on volume and efficiency. Since price negotiation mechanisms and minimum prices are so heavily regulated with regard to first landings of cod, it may lead to mental models putting an emphasis on minimum prices instead of price (and hence quality) differentiation.

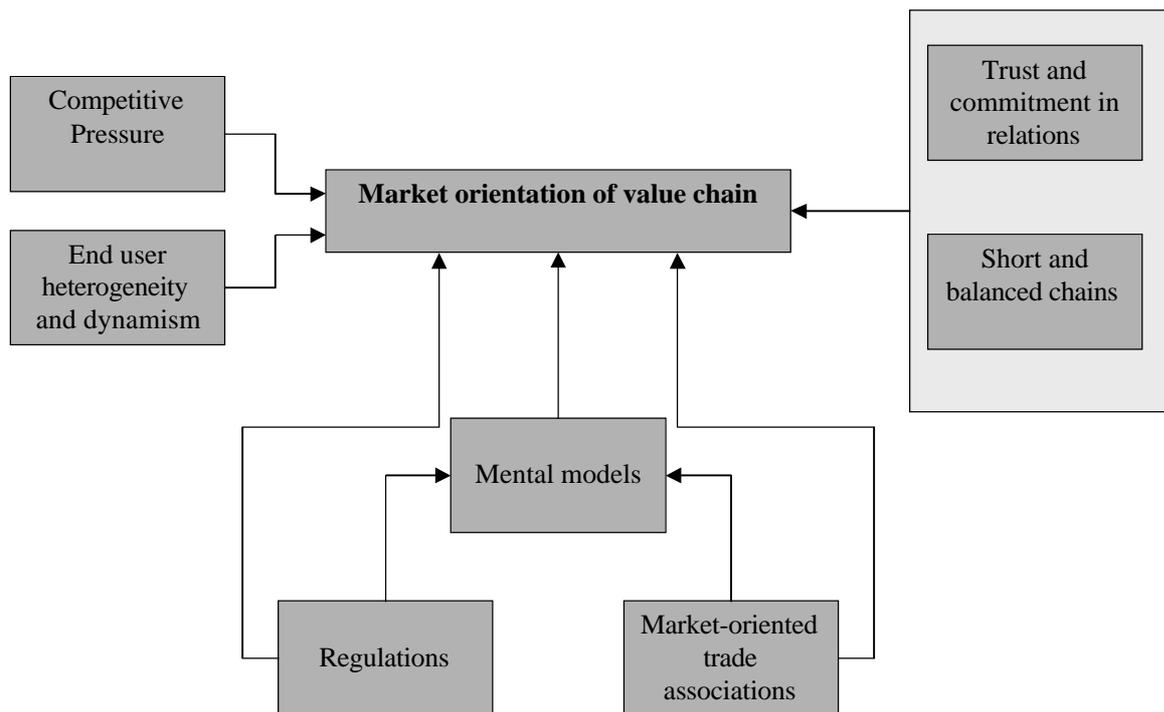
Decision-makers' mental models are, of course, also affected by other factors. In developing hypotheses on determinants of the level of market orientation of an industry, we have earlier drawn on neo-institutional theory in explaining why members of an industry may have the same way of thinking (Grunert et al., 2002). Some of that may be operating in value chains as well, and based on our cases, we suspect that again trade associations may play a big role here. Since trade associations like the Danish Bacon and Meat Council and Meat New Zealand have contacts to most of the value chain, they can have a strong impact on the dominant way of thinking among chain members.

Finally, the differences between the levels of market orientation in the chains investigated can also be related to differences in the competitive pressure under which these chains are operating. The role of competitive pressure has been discussed as a determinant of degree of market orientation at the organizational level (e.g. Avlonitis & Gounaris, 1999), and it can be extended to the level of value chains. The relatively low degree of market orientation of the lamb chain, for example, may also be attributable to the development of an international lamb meat shortage.

Figure 6 summarises our propositions on the determinants of the degree of market orientation in a value chain. It retains many of the main features of figure 1, but organises them in a way that we believe is supported by our cases. It explicitly now introduces the role of mental models and the role of trade associations.

In figure 7, we extend our argument on the role of chain relational characteristics in explaining degree of market orientation. We believe that these relational characteristics are especially relevant for explaining the extent to which dissemination of end user intelligence and responsiveness extend to the upper parts of the chain. As suggested above, we propose that balanced, short, well-integrated chains are a prerequisite for the dispersion of market-oriented activities upstream.

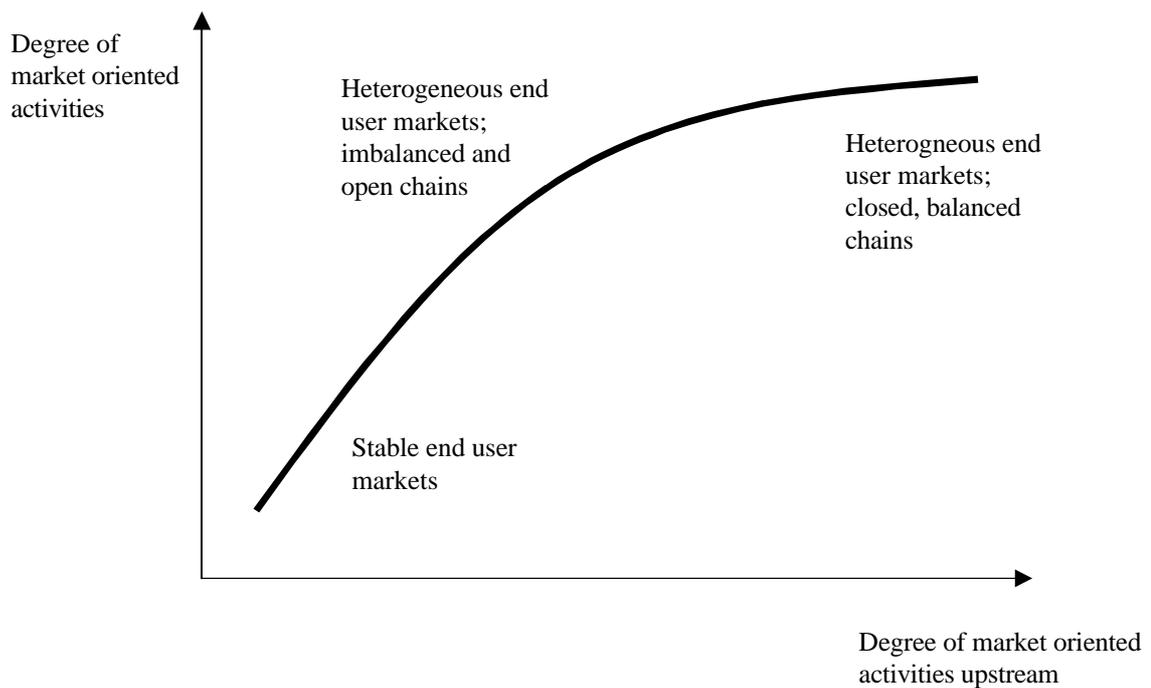
Figure 6: Revised framework on determinants of market orientation in a value chain



In closing, we would like to address two problems that we have encountered in dealing with these cases and which point back to the definition of the construct market orientation.

Firstly, the market orientation concept rests firmly on the notion of market intelligence, especially intelligence on customer needs. However, it is not quite clear what that encompasses. We found many examples where actors in the chain collect information on prices. Is this market-oriented behaviour? Quite clearly, according to basic economic theory, a price says something about customer needs, namely the value the customer attaches to the product. Prices on intermediate markets upstream the chain should reflect end user demands at least to some extent. But in the way we have interpreted the market orientation concept in our work, this type of information is not focal. Since we have linked the market orientation concept to the heterogeneity in the needs and wants of end users and in their changes over time, it is clear that the type of market intelligence we focus on relates to information that can lead to the end user oriented differentiation of offerings, either across end user groups or across time. Market orientation thus means market oriented value adding. Price information has a role in this, but it is clearly not enough. It has to be complemented by information on how end users will react to other marketing parameters. For future work on market orientation, it would be helpful to clarify the concept of market intelligence further.

Figure 7: Degree and dispersion of market orientation



The second problem stems from our discussion of the question: at which level of the value chain is end user heterogeneity best dealt with? The problem was most clearly exposed in the

orange juice case. We could point out that market-oriented activities are concentrated downstream, that heterogeneity of the raw material upstream probably could be exploited for serving heterogeneity downstream, but that this is not happening, since the raw material is first being made homogeneous, before it is heterogenised again. However, we have no way of telling whether this current configuration of the value adding process is the most efficient way of serving heterogeneous end users or not. It is conceivable that a higher degree of product differentiation upstream would be so costly that end users would not be willing to pay for it.

This relates to the general fact that the market orientation concept does not usually contain a cost element. It is usually assumed that a higher degree of market orientation is better for company profitability, but clearly there must be more and less cost-efficient ways of being responsive to customers. This also holds at the organisational level, but becomes especially pronounced when we include questions of the configuration of value chains, like in our work.

REFERENCES

- Andelsbladet (2001). Den danske svine sektor – set fra udlandet. *Andelsbladet*, no. 13, 2001, 280-285
- Avlonitis, G. & Gounaris, S. (1999). Market orientation and its determinants: An empirical analysis. *European Journal of Marketing*, vol. 33, no.11-12, pp. 309-366
- Bediksen, B.I. (2001). Driftsundersøkelsen i fiskeindustrien – oppsummering av inntjening og lønnsomhet i 2000. Rapport 15/2001. Tromsø: Fiskeriforskning.
- Bendiksen B I (2001-2002). Driftsundersøkelsen i fiskeindustrien. Fiskeriforskning AS Tromsø, Rapport 15/2001 and Rapport 20/2002
- Danske Slagterier (1981). Statistik 1980. Copenhagen: Danske Slagterier.
- Danske Slagterier (1991). Statistik 1990. Copenhagen: Danske Slagterier.
- Danske Slagterier (2000). Kvalitetshåndboken - felles træk ved dansk svinekjødsproduktion. Copenhagen: Danske Slagterier
- Danske Slagterier (2001a). Danske Slagterier i tekst og tal 2000. Copenhagen:: Danske Slagterier.
- Danske Slagterier (2001b). Statistik 2000. Copenhagen: Danske Slagterier.
- Danske Slagterier (2001c). Eksportstatistik 2001. Copenhagen: Danske Slagterier.
- Dreyer B. & Johnsen, O. (2000). Råvareflyt og institusjonelle virkemidler. Rapport 18/2000. Tromsø: Fiskeriforskning.
- ERC (2000). Processed meat 2000. Suffolk: ERC Group.
- Florida Department of Citrus (1997). Florida-Brazil processing linkages. Working paper 1997-1. Economic and Market Research Department, Florida Department of Citrus.
- Florida Department of Citrus (2001). Florida citrus outlook 2001-02 season. Working paper 2001-2. Lakeland, FL: Florida Department of Citrus.
- GIRA (1999). The EU pigmeat crisis: Winners and losers. The strategic response and remedies in the context of growing international competition, United Kingdom. Ferney-Voltaire: GIRA.
- GIRA (2000). The EU pigmeat crisis: Winners and losers. The strategic response and remedies in the context of growing international competition”, Danish Country Report. Ferney-Voltaire: GIRAG.
- Goodrich, R. M & Brown, M. G. (2001). European Markets for NFC: Supply and demand issues. Report from the Citrus Research and Education Center. Gainesville, FL: University of Florida.
- Grunert, K. G. et al. (2002). Market orientation at industry and value chain levels: Concepts, determinants and consequences. *Journal of Customer Behaviour* 1, 167-194.
- Grunert, K. G., Hartvig Larsen, H., Madsen, T. K. & Baadsgaard, A. (1996). Market orientation in food and agriculture. Norwell, MA: Kluwer.
- Grunert, K. G., Jeppesen, L.F., Risom, K., Sonne, A.-M., Hansen, K. & Trondsen, T. (2002). Market orientation at industry and value chain levels: Concepts, determinants and consequences. *Journal of Customer Behaviour*, 1, 167-194.
- Jaworski, B. J. & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, 57(3), 53-70.

- Jaworski, B. J. & Kohli, A. K. (1996). Market orientation: review, refinement, and roadmap. *Journal of Market-Focused Management*, 1, 119-136.
- Kohli, A. K. & Jaworski, B. J. (1990). Market orientation: The construct, research propositions, and managerial implications. *Journal of Marketing*, 54(2), 1-18.
- Levnedsmiddelbladet (2001). Sund, billigere juice. *Levnedsmiddelbladet*, no. 10, 2001, s. 6-8.
- Lozowick, J. (2000). UK fish market trends & prospects. Presentation to the Norwegian Seafood Export Council, November 21, 2000, Tromsø.
- Neves, M. F., Zylbersztajn D. & Neves, E. M. (1998). The orange juice distribution channels: Some characteristics, opportunities and threats. School of Economics and Business, University of São Paulo.
- Neves, M. F. & Neves, E. M. (1999). The orange juice distribution channels: Some characteristics, opportunities and threats. *Italian Food & Beverage Technology*, 18(November), 15-28.
- Neves, M. F. (1999). The relationship of orange growers and fruit juice industry: An overview of Brazil. *Journal of the Fruit Processing and Juice Producing European and Overseas Industry*, 9, 121-124.
- Rånes S.A. (2003). Spesielle kvoteordninger. *Fiskeriforskning. Rapport 11/20003*
- Søgaard, V. (1994). Farmers, cooperatives, new food products. MAPP Monograph. Aarhus: Aarhus School of Business.
- Trondsen T (1997). Value-added fresh seafood. Barriers to growth. *Journal of International Food & Agribusiness Marketing*, 8, 55-78.
- Trondsen T (2001). Fisheries management and market oriented value adding (MOVA). *Marine Resource Economics*, 16, pp. 17-37
- Trondsen T, Helstad, K. & Young, J. (2003). Market-oriented regional fisheries management? An analysis of four fish regions in the North Atlantic. *Ocean & Coastal Management*, vol. 46, no 9-10, pp. 917-941
- Trondsen T, & Johnston, R.S. (1998): Market orientation and raw material control. *Journal of Market Focused Management*, 3, 193-210

APPENDIX 1: INTERVIEW GUIDE – GENERAL OUTLINE

1. Own organisation
 - a. Describe briefly your company – its mission, its major business activities, its history
 - b. Describe briefly the way your company is organised – what are the major departments, how many hierarchical layers are there
2. Value chain and role therein
 - a. Please describe the overall value chain forWhich way does the raw material travel to the consumer, who are major actors, what are the activities performed by them?
 - b. To which extent is it possible to trace a product reaching the end user back to its origin?
 - c. What is the role of your organisation?
 - d. Who are your suppliers? Can you name your three most important suppliers?
 - e. Who are your customers? Can you name your three most important customers?
 - f. Are there trade associations, marketing boards or other auxiliary organisations that provide assistance to your and your competitors?
3. Characteristics of raw material
 - a. To which extent do you think there is variation/fluctuation in the quality and characteristics of the raw material?
 - b. Which impact do these variations have on further processing and on the attractiveness of the product to the end user?
 - c. How do you handle variation/fluctuation in the characteristics of your own supplies?
4. Characteristics of end users
 - a. What are the main demands of end users? What kind of quality do they demand? Do they demand variation, new products?
 - b. Have these demands changed over time?
 - c. Do you think there are different segments of end users, with different demands with regard to quality and product characteristics?
 - d. Do you think the sector is responsive to end user demands? Can you give some examples for responsiveness or lack of it?
5. Information on end users
 - a. What are your sources for information about end users? Do you, for example, conduct consumer research yourself? Do you get information about end users from your customers? Which other sources do you use for information about end users?
 - b. Do you give information about end users which you have come across to other members of the value chain, for example to your suppliers? Can you give some examples?
6. Responding to end users
 - a. Do you think the present actors in the sector are doing a good job in taking changing or diverse end user wants into account?
 - b. Have you in your own organisation made changes to adapt to end user wishes? If yes,

what are some examples?

- c. Have there been cases in your own organisation where you decided not to adapt to end user wishes?
- d. Can you remember a major instance where an end user wish for a different or adapted product was ignored by the suppliers, for example because it was regarded as unprofitable?

7. Relationships with suppliers

- a. How would you characterize your relationships to your suppliers? Stable or unstable? Long-term or short-term? Based on confidence or based on suspicion?
- b. How often do you change suppliers?
- c. How would you characterise the power balance in dealing with your suppliers – do suppliers have most of the power, do you have most of the power, or is it a balanced relationship?
- d. How often do you request changes in type and quality of deliveries from your suppliers? Can you give some examples?
- e. Do suppliers usually make these changes, or have there been examples where suppliers have ignored your request?
- f. Does it happen that your suppliers come with suggestions for new products and processes?
- g. Do you ever discuss end user demands with your suppliers?

8. Relationships with customers

- a. How would you characterize your relationships to your customers? Stable or unstable? Long-term or short-term? Based on confidence or based on suspicion?
- b. How often do you change customers?
- c. How would you characterise the power balance in dealing with your customers – do customers have most of the power, do you have most of the power, or is it a balanced relationship?
- d. How often do your customers request changes in the type and quality of your products? Can you give some examples?
- e. Do you usually make the changes required or have there been instances where you have decided not to make these changes? If yes, why?
- f. Does it happen that you make suggestions about new products and processes to your customers?
- g. Do you ever discuss end user demands with your customers?

9. Regulations

- a. Which national and international regulations affect your work?
- b. Which impacts have these regulations on the way you process your products? On your new product development activities?

APPENDIX 2: INFORMANTS

Bacon case

Per Poulsen, product manager, Tulip bacon plant
Per Sørensen, marketing director, Danish Bacon and Meat Council
Purchaser with responsibility for bacon, Tesco
Purchaser with responsibility for bacon, marks & Spencer
Villy Søggaard, University of Southern Denmark
Preben Sander Kristensen, Aalborg University Centre

Cod case

Senior analyst Egil Sundheim, Norwegian Seafood Export Council
Marketing manager Ingunn Strømmesen, Norwegian Rawfish Organisation
Departmental manager Berit A. Hanssen, Federation of Norwegian Fishing and Aquaculture Industries
Senior scientist Bent M. Dreyer, Norwegian Institute of Fisheries & Aquaculture Research
Scientist Bjørn I. Bediksen, Norwegian Institute of Fisheries & Aquaculture Research
Informal talks with representatives from the fishermen, processor and exporter sectors

Juice case

Jan Hermans, director, Association of the Industry of Juices and Nectars from Fruits and Vegetables of the European Union
Mr. Virtuan, president of the Brazilian growers association
Ademerval Garcia, president of ABECitrus in Brazil
Richardo Mirando, from the trade department of processing company Citrovita
Soren Jensen, from the trade department of processing company Louis Dreyfus

Lamb case

Gair Mcskimming, Head Manager, Wilkinson foods International Export Limited
Grant Cunningham, Commercial Manager, Taylor Preston Limited
Chad Brown, Manager, Horizon Meats New Zealand Ltd.
Neil H. Clarke, PhD, General Manager, Research and Development, Meat New Zealand
Purchaser with responsibility for bacon, Tesco