

Market orientation in the mental models of decision-makers in two cross-border value chains: A pilot study using the laddering technique

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Abstract

The laddering method is used to elicit mental models of actors in two cross-border value chains: Norwegian salmon to Japan, and Danish pork to Japan. The mental models are analysed with regard to overlap and linkages between actors in the value chain, with a special view towards elements in the mental models that can be related to actors' market orientation. In both value chains decision-makers have a fair degree of overlap in their views on what drives their business. There are also differences, between the chains, in what decision-makers believe are the major success factors. The pork chain seems to be dominated by thinking in terms of efficiency, technology and quality control, though communication is also acknowledged as important. In the salmon chain, there is a higher emphasis on new product development and on good relations between the chain partners.

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Introduction

Market orientation, commonly defined as the generation of market intelligence, its dissemination within the business organization, and its use in directing business activities (Kohli & Jaworski, 1990), has been identified as a major driver of superior company performance (Cano, Carrillat, & Jaramillo, 2004). However, the classical market orientation concept, with its dyadic orientation, has obvious limits. It presupposes that a company operates in 'a market' consisting of present and potential future customers, and that this market is reasonably clearly defined. However, we also know that companies form part of value chains and networks, where groups of actors, with various forms of mutual commitment, cooperate in creating value for other groups of actors. From this perspective, it becomes much less clear what 'market orientation' really involves.

There have been a few attempts to extend the market orientation concept to the value chain level. These attempts have been in two classes. The first, exemplified by the triumvirate Siguaw, Simpson and Baker (Baker, Simpson & Siguaw, 1999; Siguaw, Simpson & Baker, 1997; Simpson, Baker & Siguaw, 1999), looks at how the degree of market orientation of one company in a chain affects the degree of market orientation at subsequent stages of the value chain. This approach extends the dyadic concept of market orientation by looking at chains of dyads. The second, exemplified by the work of Grunert and colleagues (Grunert et al, 2002, in press), looks at how a whole chain of actors jointly serves an end user market, and defines value chain market orientation as the overall extent of market-oriented activities performed by the various members of the chain.

Previous research by Grunert et al. on value chains in agriculture and fisheries led to two major insights.

First, when end user needs are heterogeneous and dynamic, creating incentives for being market-oriented, value chains can deal with the adaptation of products to end users in different ways. The classical way of value chains in agriculture and fisheries is that the adaptation of products to different end user needs is done by the downstream members, whereas the upstream members of the value chain concentrate on providing an efficient supply of homogeneous input, which also involves reduction of the biological variations inherent in the raw materials. However, more recently there has been a trend to upstream adaptation with product transformation to different end user needs being undertaken at the level of the farmer or the fisherman. Different developments are fuelling this trend. Some consumer demands, such as animal welfare or environmentally friendly fish capture methods, can be dealt with only at the producer level. But in addition, developments in biotechnology and food science have led to new ways in which primary production and upstream processing can be tailored to specific consumer demands in aspects like health, eating qualities, and convenience. Such upstream product differentiation has consequences for the governance structure of the value chain, a topic that has received some attention in agricultural economics (e.g., Boger, 2001; Bogetoft & Olesen, 2002; Giraud-Heraud, Soler, & Tanguy, 1999; Mahoney, 1992). However, it also has major implications for market orientation. When adaptation of products to end users moves further upstream, new demands for information

exchange, cooperation, and especially the transfer of information on end users arise. When adaptation to end user demands is concentrated downstream, as has been typically the case, upstream value chain members need not be market-oriented with regard to end users. And indeed some channel members have been able to exploit the imbalance of market intelligence thereby engendered.

Secondly, previous research has, not surprisingly, underlined the role of mental models of decision-makers at the various levels of the value chain in determining the degree and type of market-oriented activities that are carried out. Mental models develop over time based on own experience and information received, and they may under certain circumstances resist adaptation to changing circumstances in the environment. Previous case-based research suggests that regulatory and political conditions and trade associations may have a particular role in shaping and maintaining decision-makers' mental models.

This paper concentrates on decision-makers' mental models in a value chain and on the way the role of market orientation is displayed in these. More specifically, we compare two international value chains, originating with raw material produced in Europe, dealing with different products (one meat, one seafood), but serving the same distant end user market (Japanese consumers). We assume that in value chains that cover a considerable distance not only in terms of geography, but also in terms of sociocultural and structural differences, the organization of market-oriented activity for serving heterogeneous and dynamic end users will be especially difficult. For the major members of the value chain, we map their mental models by employing an adapted version of the laddering technique. Based on the results, we look at the extent to which decision-makers in the various stages of the value chain share views on drivers of success in their market, and the role market orientation plays herein. The paper breaks new ground in exploring the role of mental models in the market orientation of value chains, but also in developing a methodology for investigating how mental models are shared among value chain actors.

Theoretical approach

Market orientation of value chains

Our point of departure is that market orientation refers to a set of organizational behaviours related to organizationwide generation, dissemination and responsiveness to market intelligence (Kohli & Jaworski, 1990, Narver & Slater, 1990). Market intelligence refers to information on consumers' and customers' current and future needs and on competitor behaviour. Entrepreneurial behaviour is a function of organizational capabilities, including managements' mental models, motivation and means, that develop over time by long-term business learning from information generated through action (Ajzen, 1991; Barney, 1996; Narver et al., 1998; Schumpeter, 1934). Variation in business orientations and behaviours is thus a function of matching differences between business environments and the organizations' capabilities (Grunert & Ellegaard, 1993). Ongoing dissatisfaction with any present competitive situation is a key driving force for changes in behaviour (Cyert & March 1963, Tirole 1988). Changes in business orientation may therefore be seen as a response to a competitive situation with unsatisfactory business performance, where market orientation is one out of several strategic options.

Each actor in the chain faces variation in competitive forces. Differences in (dis)satisfaction with the competitive situation are therefore possible determinants of variation in market orientation and thus intelligence generation and dissemination. For example, all intelligence generation could be concentrated at the downstream level with the retailer, and responsiveness could be concentrated entirely upstream in primary production. Only dissemination would then have to involve all members of the chain.

Previous research on market orientation in value chains in agriculture and fisheries (Grunert et al., in press) showed that market oriented activities were mostly concentrated in the lower parts of the chain. This found a strong drive to make raw material as homogeneous as possible before differentiating again to adapt to end user needs, perversely sometimes recreating the same type of variation that was originally present in the raw material. There were also found to be 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 these differences, a number of factors were suggested. First, the chain's organization may play a role. Governance structures involving strong and long-term links between chain members, especially upstream, facilitate information exchange and create trust and commitment. These may be 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 in 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.

Secondly, in some cases regulations may make market-oriented product differentiation upstream more difficult, especially in cases where transactions are regulated by quotas, minimum price arrangements and the like. In addition, regulations may have an impact on the mental models of decision-makers, encouraging mental models that put priority on volume and efficiency, as well as hygiene and safety, which are typical aspects of food production that are heavily regulated.

Decision-makers' mental models are, of course, also affected by other factors. Several authors have employed neo-institutional theory to understand how social and economic interrelations among firms, together with common dependencies on a range of external actors, are sources of pressure for common ways of thinking (DiMaggio & Powell, 1983; Jepperson & Meyer, 1991; Meyer & Rowan, 1977; Oliver, 1988; Scott, 1987). In addition to regulatory pressures, other actors and especially consultants, research organisations and trade associations can play an influential role too.

Mental models

In explaining differences in the degree of market orientation of value chains, previous research has suggested that decision-makers' mental models play an important role. Mental models, which have been central concepts in research on organizational cognition (Huff, 1990) and sensemaking (Weick, 1995), can be viewed as decision-makers' theories-in-use, that means their own views on which factors have an impact on the success of their business activities. Mental models of business success can be regarded as the subjective counterpart of

attempts to identify actual success factors operating in a market (Grunert & Ellegaard, 1993; Sousa de Vasconcellos e Sá & Hambrick, 1989), and in an international context also as the subjective counterpart of export success factors (Kamath, Rosson, Patton, & Brooks, 1987). Mental models frame the perception and interpretation of new incoming information and guide decision-makers' behaviour, including their market-oriented activities.

One way of analysing mental models is by the concept of cognitive maps (Spicer, 1998). A cognitive map is a graphical representation of part of a person's knowledge domain, indicating both the central concepts characterizing this domain and the way they are interlinked in the mind of the person. Cognitive maps can be derived and drawn in many ways, but the most common approach is the network approach (Fiol & Huff, 1992; Huff, 1990). Network models have the advantage that they are firmly rooted in research in cognitive psychology (for basic theory on network models of cognitive structure, see Anderson, 1983, Grunert, 1994; Norman & Rumelhart, 1975). In a network model, cognitive structure is modeled as a set of nodes and links, where the nodes represent fragments of knowledge, ie, cognitive categories, and where the links represent associations between them; these associations may be of various kinds, causality being one of them. When the links represent causality, we also talk about causal maps (Bougon, Weick, & Binkhorst, 1977).

One popular approach in deriving and analyzing causal maps has been personal construct theory (Kelly, 1955). Personal construct theory assumes that the way people make sense of the world is by categorizing incoming information into a set of bipolar constructs, which are hierarchically ordered in terms of abstractness and linked to each other by means of causality. Thus, a manager may categorize a production facility in terms of efficiency (which we rephrase as a bipolar construct inefficient-efficient), which is causally related to another construct called profitability (unprofitable-profitable). A number of methods have been developed to elicit people's personal constructs, which we come back to in the methods section. Personal construct theory is invoked in a series of studies on managerial causal maps (Eden & Ackerman, 1992).

In a variety of business-related applications, personal construct theory has been developed into means-end theory. The central construct of means-end theory is the means-end chain, which is a specific building block in mental models, namely a sequence of cognitive categories ordered by the level of abstraction and linked by causality. Thus, in the example above, modern technology -> efficiency -> profitability would be an example of a means-end chain. More abstract concepts can be viewed as ends, which can be achieved by means of the less abstract concepts. Some concepts are ultimate ends, in the sense that they are not means for achieving something else.

Personal constructs are, as the term indicates, personal – i.e., idiosyncratic to a single individual. While the mental models of key decision-makers are of interest, we are also interested in the role which they play in the organization or, in the present case, in the value chain. Shared beliefs and shared mental models play a role in the organizational cognition literature (Langfield-Smith, 1992), mainly from the point of view that a certain degree of commonality of mental models is the core of the organization's culture and has implications for a common sense of mission and a common strategy, especially in cases where strategies are not formally formulated and implemented in top-down planning processes.

Of special interest for our own purposes is work that deals with how individual means-end chains can intersect in an organizational context (Peffer & Gengler, 2003; van Rekom, van

Riel, & Wierenga, 2000). Van Rekom et al. distinguish two such types of intersection: either as part of the delegation of tasks in the organization, or as complementary contributions by different employees to achieve a common end. We can extend this line of thinking to the value chain context. What corresponds to delegation in the intraorganizational context is dispersion of tasks in the value chain: where 'good relations with trade' may be a means to an end for a processor, with no sub-means, it can be an end to a supplier, as visualized in the example in figure 1. Value chain members, as organizational members, can also have common ends, for example creating high perceived value for the customer, as in the example in figure 1. We will term these two ways of interorganizational relations between mental models *linkage* and *overlap*.

Figure 1 here

Selection of two value chain cases

International value chains with point of departure in agriculture and fisheries are of interest for various reasons. They serve turbulent end user markets, making market orientation especially important. The biological variation in the raw material, and turbulence in its production environment (especially in seafood), obfuscates information along the whole value chain back to end users compared to more standard products. There may be considerable cultural differences between the locations of the various value chain members. With these considerations in mind, we have selected two value chains bridging Europe and the Japanese end user market. The first case follows Danish pork meat to the Japanese end user. Danish pork export to Japan has been a highly successful venture into what is often regarded as a difficult market, and previous research on the Danish pork sector has indicated that market orientation may play a role in this. The second case follows Norwegian salmon in the Japanese market.

Danish pork to Japan

Denmark is the biggest exporter of pork in the world, exporting 85% of its total production of 1.85 million tonnes pork per year. Japan accounts for 14.9% of Danish export volume, but 23.2% of export value, indicating that Japan is a high value market.

Pork production in Denmark is firmly in the hands of one major player, Danish Crown, which accounts for 94% of all slaughters. Danish Crown is a cooperative, owned by about 20,000 pig producers. The Danish Crown concern, in turn, owns a number of processing companies, both in Denmark and in other countries, of which Tulip is the most well-known. Even though there is only one major player left in the Danish market, there is also a strong trade association, the Danish Bacon and Meat Council, which performs a number of tasks related to R&D, sales promotion, disease prevention and control, and generation of market intelligence. The Danish pork sector thus has a high degree of concentration and vertical integration and deals with its Japanese counterparts without additional intermediate agents.

On the Japanese side, Japanese meat processing is dominated by four major players which account for two thirds of all processed pork meat. Further down the value chain, the picture becomes more dispersed: processed meat products find their way to consumers via retailers and a range of food service outlets. Japanese retailing is much less concentrated than

European retailing, due to legislation restricting large scale retailing. Even though this legislation has been eased, the Japanese retail structure remains much more fragmented.

Trading houses used to play a role in facilitating transactions – they did all the paperwork and formally handled the imports, whereas the physical transactions and also much of the other contact was directly between the slaughterhouse and the meat processor. Today, only about 20% of the exports go through trading houses.

At the end user side of the value chain, we can note that Japanese eating habits have undergone dramatic changes since the times when the main feed was fish and rice. Japanese traditionally had fish and rice for all meals during the day. After World War II, the Japanese cuisine has become more international, although fish and rice are still the most common meal components. Pork meat consumption was 17.3 kg per inhabitant in 1999, compared to 60.3 kg in Denmark in 2001. For breakfast bacon, sausage and ham is used, while for lunch and dinner there is a more diverse use of pork meat. The main selling product of pork meat for lunch and dinner is Tonkatsu, which is a special type of pork cutlet breaded and fried in a pan.

The overall value chain is depicted in figure 2a.

Figure 2a here

The raw material for these products, the Danish pig, is a highly homogeneous product, due to a long history of breeding and quality control. Pig production is ruled by nationally agreed specifications of weight, fat content etc., which are negotiated by the farmers, slaughterhouses, the Danish Bacon and Meat Council, authorities, retailers and consumer organisations. The Danish farmers are paid according to adherence to these specifications, meaning that close adherence to the agreed product specifications gives improved income. Danish Crown offers about 200 standard cuts, but for the Japanese market, all cuts are made to specifications. The slaughterhouses in Denmark slaughter, debone, cut, freeze and pack in bulk for the Japanese market. The cuts are made to specifications with a very tight margin, which means that they choose the pigs to match the cuts, to avoid too much waste. The most common cuts are belly, loin, pig wing shoulder, calla butt and tenderloin. A major limitation for the export of Danish pork meat to Japan is the distance to user. It takes 5 weeks to transport the pork meat from Denmark to Japan. This also means that the Danish slaughterhouses are only able to sell frozen pork and cannot compete on the fresh pork market.

The relations between the Danish slaughterhouses and the meat processing companies in Japan are long term relationships, which have lasted for more than 30 years. This is a major competitive advantage for the Danish slaughterhouses, as relations are very important in the Japanese business environment. Some of the Japanese traders and pork meat processors talk about buyer power, but the vast majority of slaughterhouses, traders and pork meat processors see the relations as being evenly balanced.

Norwegian salmon to Japan

Norway is the biggest exporter of farmed salmon in the world, exporting 85% of its growing production that reached 580,000 tons in 2003 up from 410,000 tons in 1998. The export to Japan accounted for 10% of volume in 2004, down from 15% in 1998. Globally, the market

for farmed salmon, which was pioneered by the Norwegians, has increased from nil to almost 1.2 million tonnes in the 2000s. The Norwegian growth model story has been imitated in countries like Chile, UK and Canada, partly driven by Norwegian entrepreneurs. Increased global competition of salmon has gradually reduced unit prices, in the period 1998-2004 alone by about 20%. The price decreases have followed similar reductions in production costs and the emergence of scale economies through industrial restructuring from many small farmers to 4-5 major production and exporting networks. Generally, product differentiation at the farm level is very low. The basic salmon product is relatively standard and can be substituted by most suppliers worldwide.

On the Japanese side, the biggest Norwegian processor and exporters act also as importers. In addition, both the major Japanese food trading companies and smaller trading companies import salmon directly from Norwegian exporters.

Figure 2b about here

Even although the salmon is farmed, and the quantity supplied can thus be controlled to some extent, there remains significant fluctuations in volumes and prices due to seasonal supply pressure also from wild salmon from the USA, Russia and Japan. Supply variations are absorbed through market clearing mechanisms and the central wholesale fish market in Tokyo plays an important role as a buffering and distribution link between supply and demand chains.

The food distribution system in Japan has traditionally been controlled by big importing and trading companies partly protected by import and food regulations. New trends regarding deregulation and growing retail chains have begun to change this pattern. The big importers, partly in alliance with big processing firms, have to focus more on supplying these more powerful retail chains. To balance the market power, there is also a tendency whereby the retail chains are moving towards direct importing activity. The entry barriers for fresh fish imports and trading are very low; this creates room to manoeuvre for smaller importing companies working in close relations with the wholesale market and smaller fish stores, grocery stores and restaurants.

Seafood consumption per capita in Japan has been decreasing over recent years but is still amongst the highest in the world: about 66 kg per capita live weight equivalent compared to 50 kg in Norway (2003)¹. The consumption trend is changing from traditional products like fishcakes/ kamaboko to more high quality, and high value, products like sushi and sashimi favouring species like tuna and fresh salmon. Total exports of Norwegian salmon to Japan grew steady up to 2001, but fell back to the 1998 level in 2004 due to stiff competition from Chile and growing demand from alternative markets for salmon, especially Russia. The trend has been the same in all product categories except for filleted frozen salmon which has remained stable over the period 2000-2004. Airfreight costs are a major trade barrier for fresh salmon, but the lack of alternative fresh supplies limits competition. Frozen farmed salmon trout and frozen farmed and wild salmon are the major substitute products; but these command a significantly lower price.

The relations between Norwegian exporters and Japanese trading houses have developed over a long period of time. The trade relationships also include other fish species like mackerel and

¹NOAA Fisheries (2003): Fisheries of the United States . <http://www.st.nmfs.gov/st1/fus/fus03/index.html>

capelin. These trading companies' advantages have traditionally been based on their import licences and financial strength to purchase and store big amounts of frozen fish for reselling to numerous smaller processors and retailers. The fresh fish trade is, however, more characterized by just in time (JIT) delivery, which has opened the market for smaller firms both in terms of Japanese traders and Norwegian export offices. Norwegian farmed salmon was sold to 94 countries (2004), whereas 90% is exported to 19 countries. To a large extent the traders are price takers in a global market. The market power between the Norwegian exporters and Japanese importers is therefore balanced. Market power in the fresh salmon market is related to business relationships, market oriented product quality and JIT delivery globally, while financing and storage capabilities add to market power in the frozen salmon market.

Methodology

For each case, preparatory desk research, based on accessible documents and websites, was carried out. Based on this, an overall characterization of the value chain, including its main actors and its governance structure, was prepared. In the next step, key informant interviews were carried out with representatives of all links in the value chain.

A variety of techniques is available for eliciting decision-makers' causal maps (Ahmad & Ali, 2003; Daniels, Johnson & deChernatony, 2001; Hines, 2000). Most of them are open techniques. The most generic approach to the generation of cognitive maps involves first a stage of concept generation, and after that a stage of structuration, where respondents have to establish links between the concepts generated or otherwise provide structure, for example by sorting. We have chosen a method that has been developed in the context of personal construct theory and that hence is in line with our theoretical approach. This method, laddering, has also the advantage that the phases of concept generation and elicitation of links between concepts occur simultaneously.

Laddering was originally developed by Hinkle (1965) in the context of personal construct theory (Hinkle did not use the term 'laddering' though). Building on the work by Kelly (1955), Hinkle wanted to develop a method that elicits hierarchical meaning systems in a therapeutic context. Starting at the most concrete level, respondents generate a first bipolar personal meaning construct (e.g., I prefer active holidays). This becomes the bottom of a ladder. The interviewer then asks 'Why' or 'Why do you prefer active holidays', and the respondent then generates a second, more abstract bipolar construct, like being physically fit as opposed to being physically feeble. The second construct is also followed up by a 'Why' question and the process continues until the ladder has reached a level of abstractness beyond which it is impossible to continue. Laddering has been widely used in personal construct research (Costigan, Closs & Eustace, 2000), but has also been used in research on knowledge acquisition (Rugg & McGeorge, 1995), organizational research (Rugg et al., 2002), architecture (Honikmann, 1977) and consumer research (Reynolds & Gutman, 1988).

In the present study, a reversed laddering methodology was used (Bisp, Sørensen, & Grunert, 1998) (Harmsen & Jensen, 2004). Informants were asked what it takes to have success in their business. Answers were recorded, and for each answer a second round of questions was asked inquiring about relevant business activities or competencies necessary for achieving the previously mentioned reasons for success. This procedure was repeated in several layers until

a comprehensive tree mapping the respondents' subjective causal structure impacting business success had been achieved.

For the salmon chain, 12 interviews were conducted by a Japanese speaking person. Of these, 3 were with Norwegian producers/exporters, 7 were with Japanese importers/processors, and 2 were with Japanese retailers (Campos 2003). For the pork chain, 12 interviews were conducted. Of these, 4 were with producers/exporters, and 8 were with importers/processors. The informants are characterized in table 1.

The salmon interviews were conducted in Japanese. The pork interviews were conducted in English/Japanese with a translator. This difference in methodology might account for the difference in data richness encountered in the two sets of interviews.

Table 1 about here

The laddering technique with its extensive probing turned out to be not without difficulties with Japanese informants, who perceived the interviewer as insisting on talking about topics which the informants thought they already had dealt with. This could hint at a difficulty in the cross-cultural use of this interview technique that merits further investigation. For example, some may consider such persistence as rude and impertinent; possibly where languages are not common and uneven in command repetition may infer a lack of clear expression or understanding. Obviously such interpretations are unlikely to facilitate the data collection process.

Analysis of the laddering data occurred according to standard procedures for using this type of data (Grunert, Beckmann, & Sørensen, 2001). All ladders were subjected to a coding procedure, resulting in a limited number of concepts at various levels of abstraction. For these concepts, an implication matrix was constructed. The implication matrix is a symmetrical matrix of all the concepts resulting from the coding process, where the entries are the number of times one concept was named as implying another (causal link) across the various ladders. Based on the implication matrices, so-called hierarchical value maps are derived. These are maps showing the most important (as measured by the frequency of elicitation) links between concepts in the ladders generated for a group of respondents. This analysis was done using the MecAnalyst software. The underlying procedures are described in Reynolds and Gutman (1988) and Grunert and Grunert (1995).

Results

Figures 3 to 5 show the hierarchical value maps for producers/exporters, importers/processors and retailers for the salmon value chain. In comparing these three maps, we look for areas of overlap and of linkage: parts of the causal map that the various chain members have in common, and parts which are not common across the chain but which link into each other.

Figures 3-5 here

We find one chain which is common to all three actors:

- *Market oriented product development*, consisting of the links *range of products* – *new product development* – *customer preference* – *high perceived customer value*.

The importance of new product development as a source of competitive advantage thus seems to be universally recognized across the value chain.

Producers/exporters and importers/processors also have three additional chains in common:

- *Relationship management*, consisting of the links *customer-supplier relationships – network building – high perceive customer value*
- *Quality management*, consisting of the links *consistent quality – high perceived customer value*
- *Trust management*, consisting of the links *build trust and reputation – good relations with trade – high perceived customer value.*

All three chains deal with the quality of the relationship, and seem to indicate that actors in the producer-processor dyad agree on the importance of a good relationship characterized by trust.

Also the lower dyads in the chain, i.e., processors and retailers, have two additional areas of overlap. They agree on the importance of high quality products, and they agree on the importance of a good customer-supplier relationship and of commitment and competence for new product development. This indicates that also in the lower dyad the quality of the relationship is regarded as important, but it is linked specifically to the development of new products.

In addition to these areas of overlap, there are also some linkages. Producers and processors agree on the importance of trust and reputation and of consistent quality, but the map of the producers includes links on how to ensure trust and consistent quality: by access to supplies, by being reliable, honest and consistent, and by joint cooperation and competitive advantage. The rest of the maps relate to determinants of costs, and while there is not much direct overlap, the three groups of actors seem to agree that in having lower relative costs a major determinant has to do with dealing with and reducing uncertainty. In retailing that is linked to logistics, inventory control and ability to predict demand; for processors to using market information to reduce risk, and for producers to being able to predict demand and exercising market power.

Figures 6 and 7 show the hierarchical value maps for producers/exporters and importers/processors of pork. The two groups of actors agree on the importance of communication abilities, safety and modern production technologies in creating higher perceived customer value, although importers/processors mediate this relationship via high quality products. Likewise, there is agreement on the importance of production skills for achieving lower relative costs. There are differences in what leads to food safety – consistent quality for producers and production skills and modern production technologies for processors. For processors, new product development and control of the whole value chain are also related to high perceived customer value. For producers, trade efficiency and the ensuing risk handling ability are related to low costs, as well as having market information.

Figures 6-7 here

Discussion

The comparison across the two value chains is hampered by two factors. First, there were no interviews with retailers in the pork chain, giving a less complete picture. Even though the retail organizations dealing with pork and salmon are largely the same, the people in the organization dealing with the exporters, and who were the appropriate informants for the interviews, were not the same. Consequently the results obtained for the salmon chain do not necessarily apply to the pork chain. Secondly, while the total number of interviews for the two chains is the same, the number of ladders generated was higher in the salmon interviews, leading to more data and hierarchical value maps with a higher degree of stability. There is no obvious reason why the respondents in the pork chain should have been less talkative or less differentiated in their reasoning than respondents in the salmon chain, so we are most inclined to attribute this difference to the two different interviewers handling the two series of interviews.

With these precautions, the overall impression is that in both value chains decision-makers have a fair degree of overlap in their views on what drives their business. There are also differences, between the chains, in what decision-makers believe are the major success factors. The pork chain seems to be dominated by thinking in terms of efficiency, technology and quality control, though communication is also acknowledged as important. In the salmon chain, there is a higher emphasis on new product development and on good relations between the chain partners.

In speculating further on these differences, we should note that the results mirror the views of informants on what drives success in the chain, not necessarily on how the chain actually works today. When informants in the salmon chain thus say that good relationships and product development are key drivers of success, this means that they agree that these factors are the key to success, but not necessarily that the chain presently has excellence in this area. Likewise with the pork chain: the emphasis on efficiency, modern technology and quality control shows views on drivers of success, not necessarily on the state of affairs, although most observers of the Danish pork production chain would probably agree that these are indeed parameters where the actors have shown a very high degree of proficiency.

What, then, about market orientation? The way we have defined market orientation in the chain, it should be mirrored in the maps by concepts relating to access to or generation of market information, exchange of such information between partners with good relations, and use of it, mainly in product development. Elements of this are present in all the maps. Generally speaking, though, the actors in the salmon chain, with their high emphasis on good relationships, product development and market information, seem to exhibit a stronger prominence of market-oriented concepts among their decision-makers than in the pork chain.

This paper has tried to promote three novel ideas. First, we suggested considering value chains by looking at shared concepts and linkages across the mental models of the various actors in the chain. Secondly, we proposed to use the laddering method to elicit maps visualizing these concepts. Thirdly, we wanted to analyse mental models in a value chain from a market orientation perspective.

This was a first pilot study, and we need to be cautious in interpreting the results. Notwithstanding these limitations, below we forward some substantive and some methodological conclusions.

Importantly, we found that elements of market orientation show up in the causal maps of all decision-makers, but to different degrees. More specifically, the salmon chain maps contained more elements of market orientation than the pork chain maps. This result was a bit surprising to us, given the enormous commercial success of Danish pork exports to Japan. While the difference may be due to methodological difficulties (which we address below), we venture one other possible explanation. The major competitive advantage of Danish pork in dealing with the Japanese market is a very high level of quality control, made possible by modern and efficient technology that also guarantees a high level of safety. This advantage, which seems to have been sustainable for quite a number of years, gives protection from competing chain branches and reduces the need for market orientation in this part of the activities of Danish pork production (as compared to some of their European operations, see Grunert et al., in press). We may thus be dealing with the type of value chain where most market-oriented activities are dealt with downstream in the value chain, i.e., processors and retailers, whereas the upstream part can concentrate on efficiency, safety, and quality control. On the other hand, Norwegian salmon is largely a commodity and as such is under competitive pressure from other potential chain branches. This competitive pressure can be counteracted by a higher degree of market orientation. This may be the shared view among decision-makers in this chain, even though the actual degree of market orientation is not very high. Compared to the Danish pork chain, the fish farming value chain has considerable potential for market-oriented product differentiation already at the level of the fish farm, although this potential may not have been exploited to date. Indeed as the numbers of new species from aquaculture are launched on to the international market, it might be expected that greater reliance will be placed upon market-oriented product differentiation as one means to achieve comparative advantage.

We also note the different concepts of quality. The retailers only emphasize high quality products, which is overlapping with the importers. But the importers also emphasize constant quality, overlapping with the exporters. High quality is not part of the exporters' mental models.

We also note differences in the way market power enters the mental maps. While the exporters focus on market power as an antecedent to low relative cost supported by intensity of distribution, the retailers focus on market power as an antecedent to high perceived value supported by customer preferences, logistics and pricing. The importers do not emphasize market power as such, but "service to our customers" as an additional unique means to achieve customer satisfaction. We might speculate that relationship, quality and trust management are for retailers and exporters an important means to keep the value chain open, whereas they are making their profit in logistics and intensity of distribution, while the importers actually make their money in service activities linking exporters and retailers.

Retailers also emphasize access to suppliers as a means for securing high quality, which reflects earlier findings in the fresh fish market, that a lack of suppliers offering high quality is perceived as a barrier (Trondsen, 1997). However, from a supplier perspective, marginal higher quality above an average consistent quality might not add more value due to higher marginal cost.

The linkage between product development and customer-supplier relationships in the supplier and retailer chains illustrates the often conflicting interests in new product development. This is especially so for fresh products and products sold under the retailer's label. New product development at the processing level is linked to considerably more parameters than at the

level of primary production, creating a necessity for good relations between processors and retailers on exactly this topic.

Methodologically, we find that the laddering method is a promising tool for investigating mental models among decision-makers in a value chain. We also encountered a number of problems, though. The method proved to be difficult to use with the Japanese respondents, who disliked the repeated probing and what they perceived as intruding behaviour from the interviewer. One may therefore consider using less personal varieties of the method, for example by using pre-specified concepts or concepts generated in a repertory grid task, which respondents then can assemble into chains or sort into piles. The fact that we did seem to have a considerable interviewer effect, leading to a clearly smaller number of ladders for the same number of interviews for the pork chain, is unfortunate. The natural way to counteract this is to provide some more structuring to the interview, for example by formulating targets both for the number of ladders to generate and for the number of levels a typical ladder is expected to have. Although such greater control may induce some risk of bias. The card sorting methodologies mentioned may be able to achieve this more easily than open interviews. Generally, there may be reasons to develop harder forms of laddering (Grunert & Grunert, 1995) than the very soft form of laddering used here.

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Table 1: Informant characteristics

<i>n</i>	<i>Value chain role</i>	<i>Additional functions</i>	<i>Relative size</i>
Salmon chain			
2	Producer/Exporter	Local office in Japan	Big
1	Producer/Exporter		Big
4	Japanese importer	Processor/distributor	Big
2	Japanese importer	Processor	Medium
1	Japanese importer		Medium
2	Retailer		Big
Pork chain			
3	Producer/Exporter	Local office in Japan	Big
1	Producer/Exporter		Medium
3	Japanese importer	Processor/distributor	Big
3	Japanese importer	Processor/distributor	Medium
2		Distributor	Medium

Figure 1: Overlap and linkage in means-end structures of two decision-makers

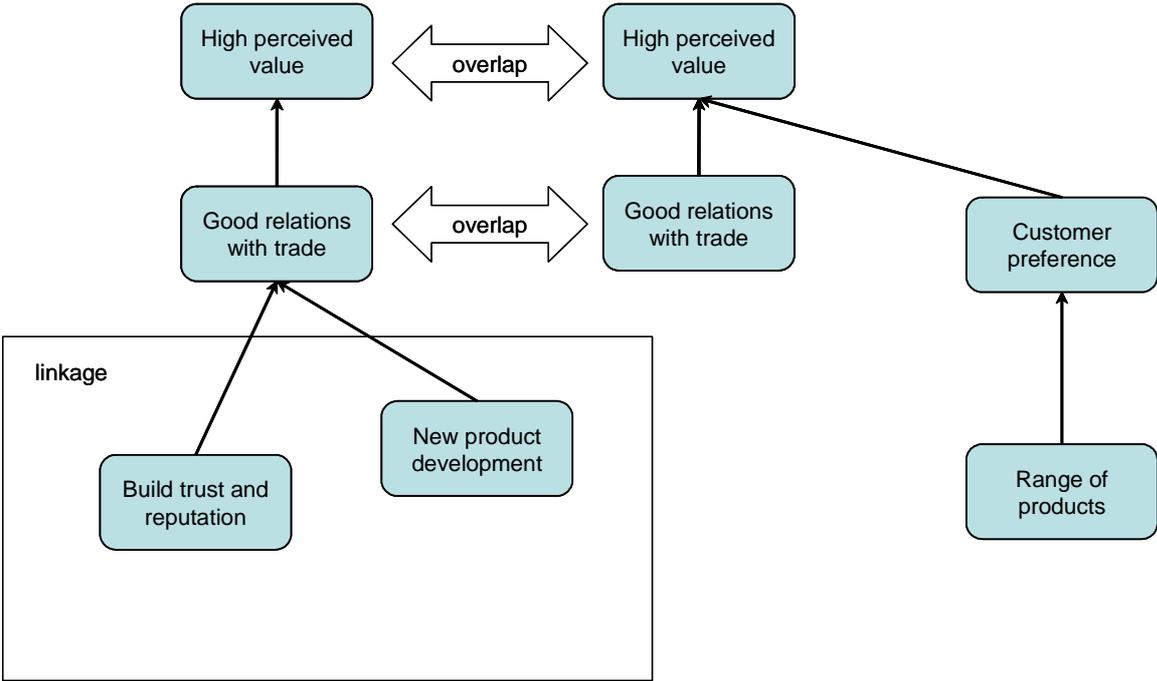


Figure 2a: Danish pork to Japan value chain

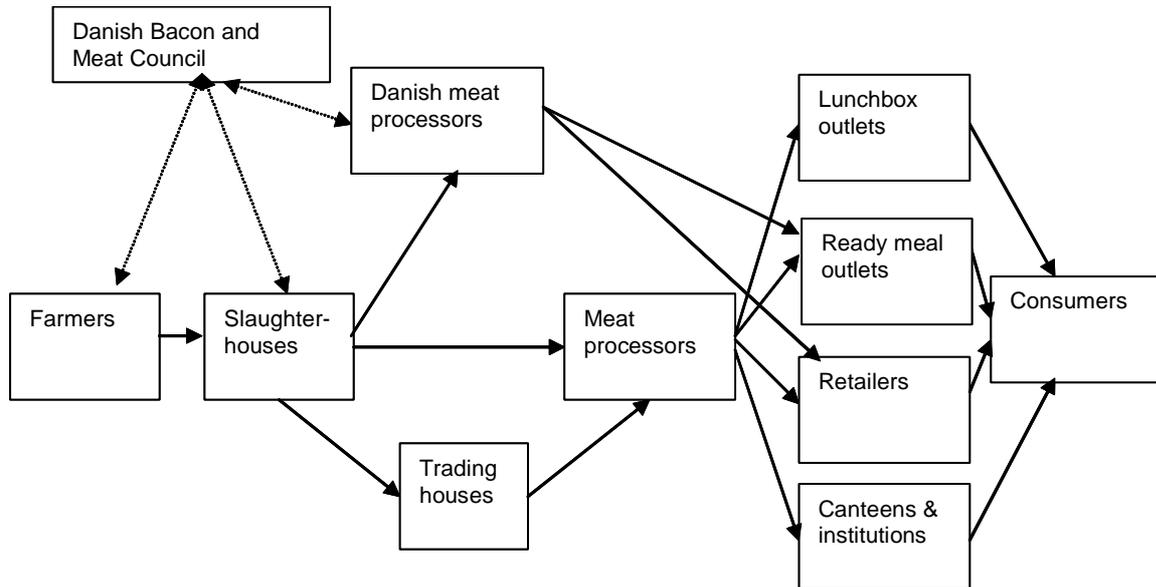


Figure 2b. Norwegian salmon to Japan value chain

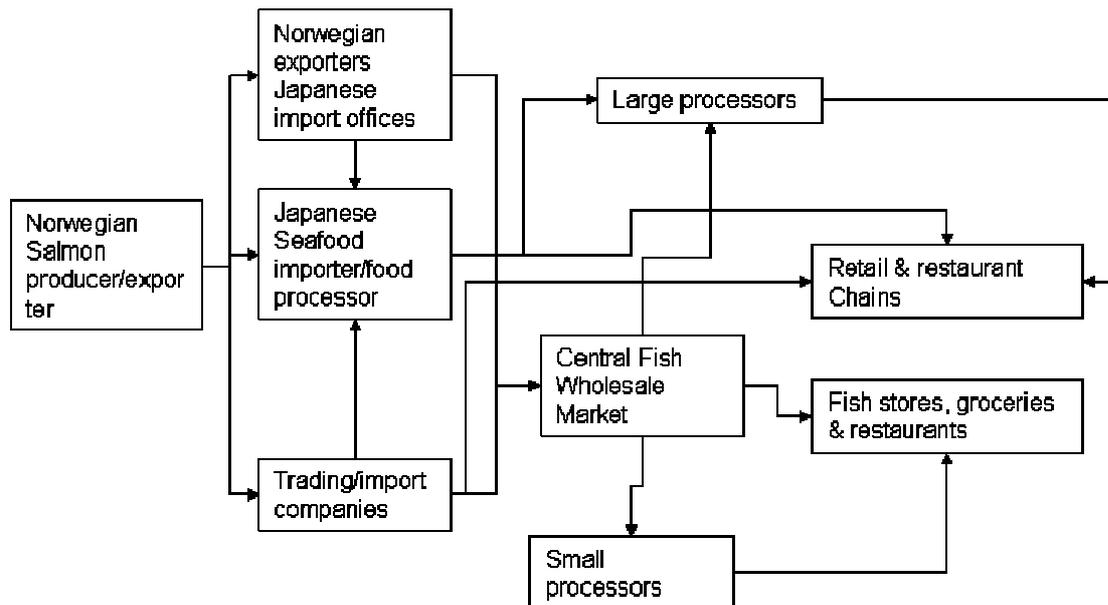


Figure 3: Map for producers/exporters of salmon

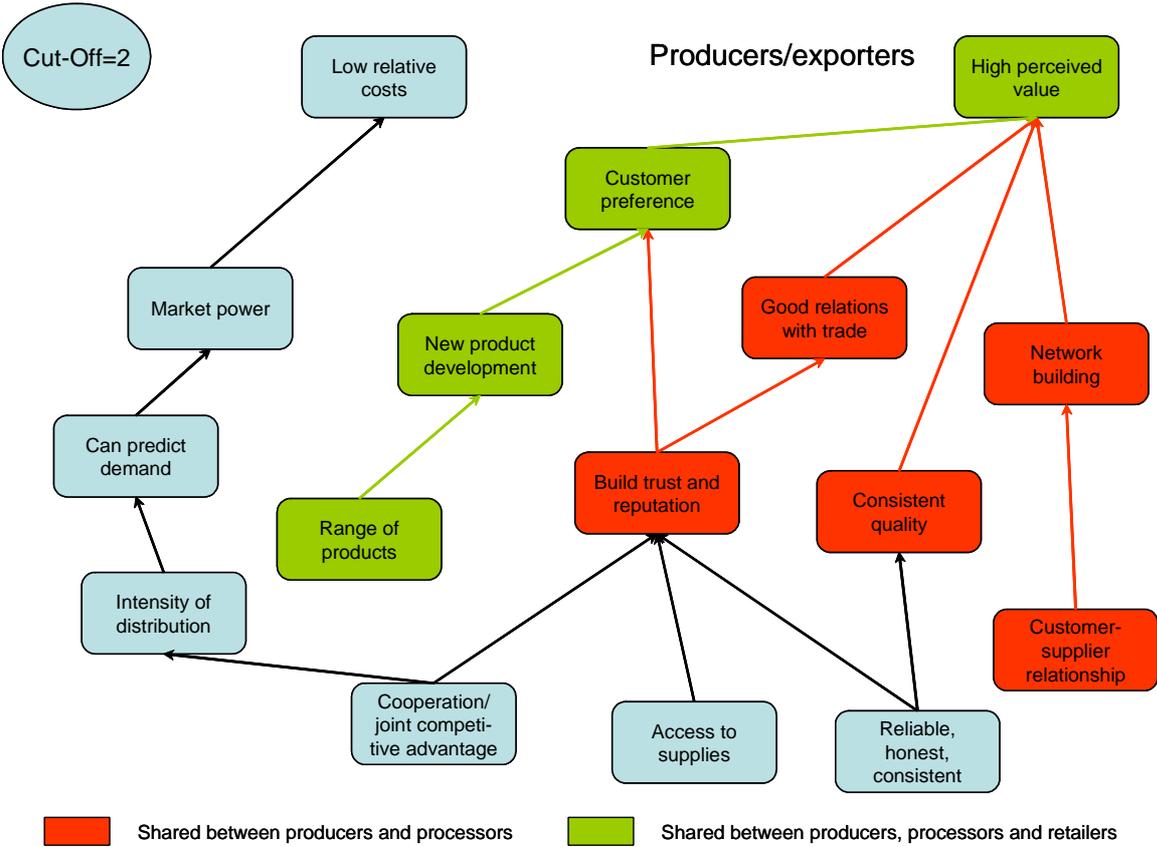


Figure 4: Map for processors/importers of salmon

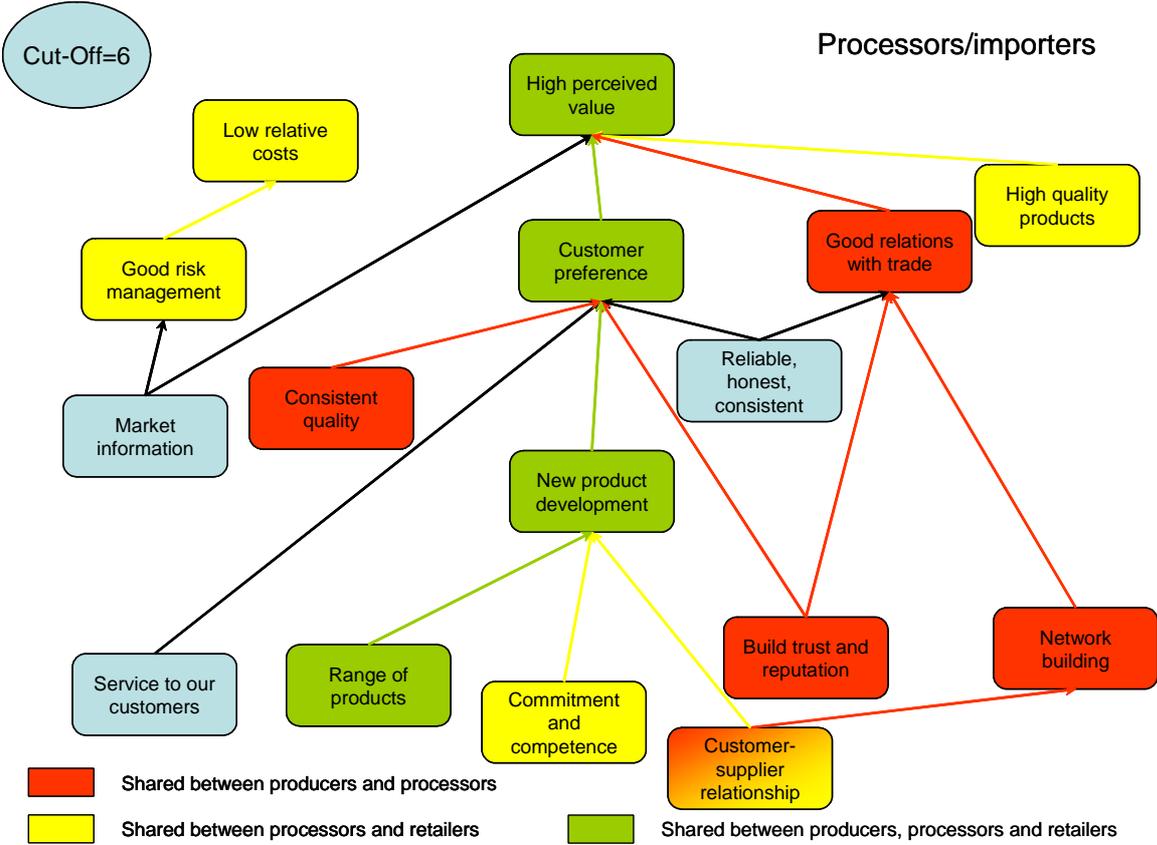


Figure 5: Map for retailers of salmon

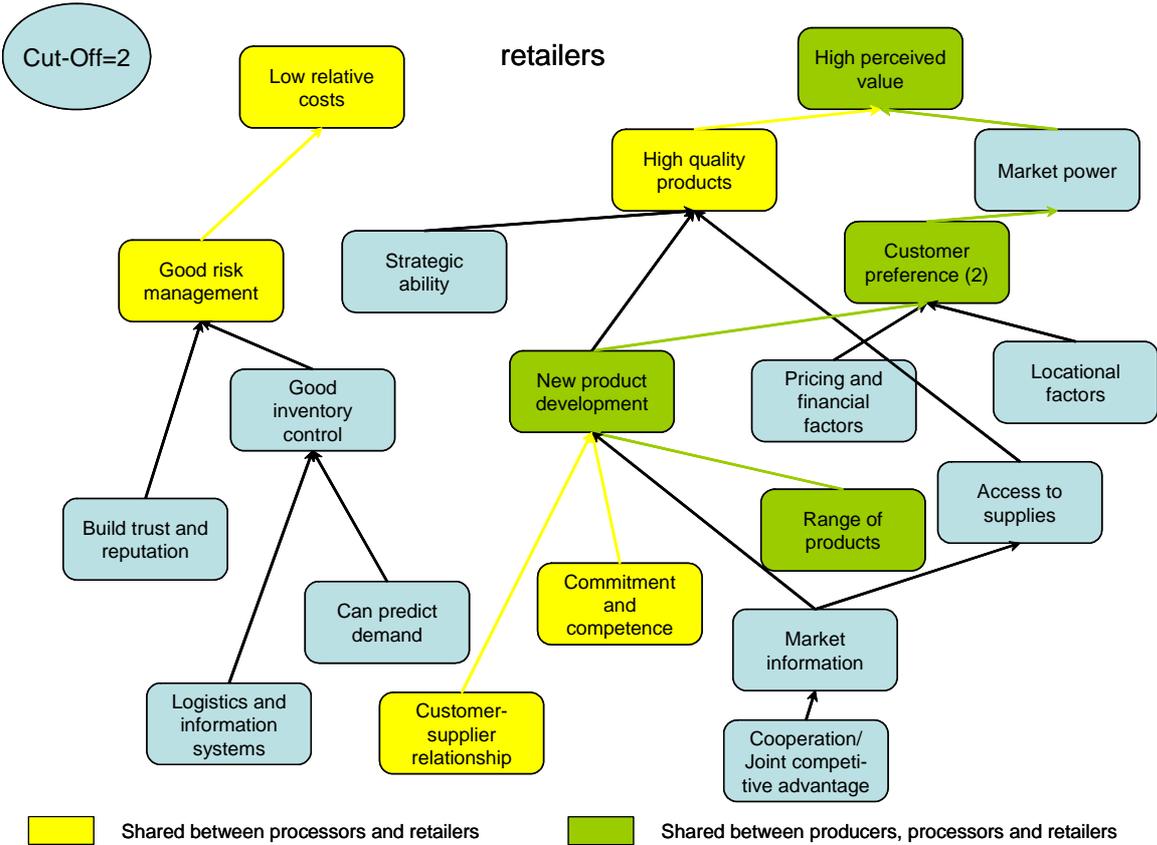


Figure 6: Map for producers/exporters of pork

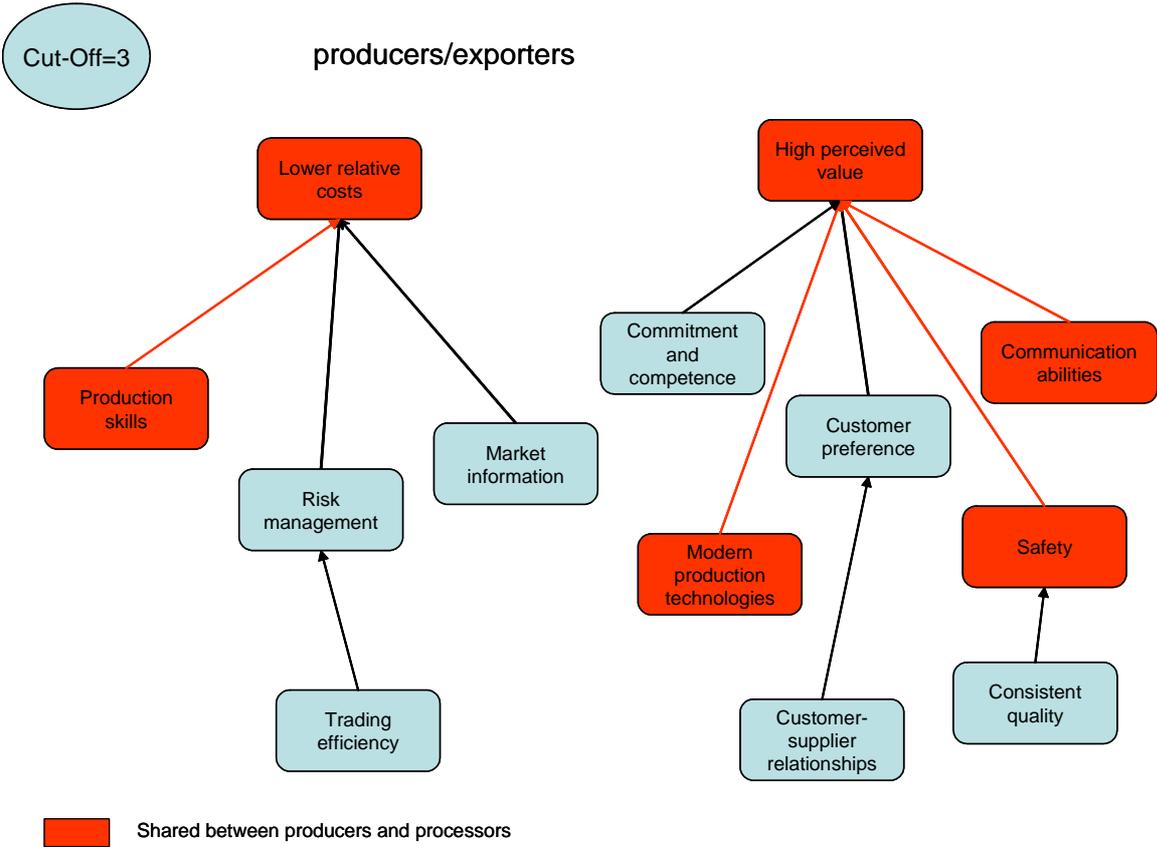


Figure 7: Map for processors/importers of pork

