Perceptual product connection in an international context

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Abstract

The consumer’s perception of a product is affected by his or her perception of similar and complementary products available from foreign countries. The subject under discussion is how consumers perceptually relate standardized products in an international context. The specific focus is on how those perceptual relations are connected to each other. A model for connection between such relations has been proposed and tested with the LISREL method. The findings clarify how consumers’ beliefs about one product affect their beliefs about other products, the producers of the products, and their own purchasing behaviour. Two interrelated factors—product substitutes and the products’ country of origin—are presented as the basis for the connections. The study aims to enhance our understanding of international consumer–product relations and brings new knowledge to the study of international consumer relations. The article finds that consumers perceive different connections inside and outside the country of origin. Inside the country of origin, the perception is that both substitute products and substitute producers are connected. This implies that consumers connect much of what is produced and imported in one country. Outside the country of origin, consumers seem to connect substitute products with other substitute products, and substitute producers with substitute producers independent of the country of origin. But consumers do not seem to connect substitute products and producers with each other outside the country of origin. These findings open up a new field of research. © 2000 Elsevier Science Ltd. All rights reserved.

Keywords: Perception in an international context; Network; Connection; Consumers; Country of origin

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1. Introduction

In considering relations in consumer markets, Sheth and Parvatiyar (1995) noted the critical point that, for those major groups of standardized consumer products, such as foodstuffs, where a direct relationship between consumers and sellers is unlikely, relationship marketing studies have tended to be somewhat quiet. The specific nature of these products means that consumers encounter the products without coming into contact with the sellers (Rice, Wongtada & Leelakulthanit, 1996). Following the suggestion made by Sheth and Parvatiyar (1993, 1995) and Bagozzi (1995) and Bagozzi (1995), the present research makes an effort to study the subject of consumers’ perceptual relations to standardized products (cf. Shimp, Samiee & Madden, 1993). The aim is to consider how the way that one product is perceived affects the perception of other products. Thus, the focus is on the connections between the relations, or, in other words, on how a change in the belief about a product’s attributes transfers to and influences the consumers’ perceptions of other products. To examine these connections between relationships, a model was developed that employed the LISREL method to test the results. The purpose was to enhance the understanding of consumer–product relations and to develop the knowledge concerning consumers, products and producers in international business relations.

The paper studies the perception individuals have of specific objects as determined from social information about specific objects (Duck, 1993). Cognitive perception is defined as being the set of partial elements—beliefs—which are viewed as having an explicit cause and effect relation with each other (Nyström, 1979; Shimp et al., 1993). The term cognitive structure connotes consumers’ encoded representations of information, which, in the context of this study, refers to what consumers know or believe from their extrinsic cues (Foxall, 1993) for several local and imported products (Kanwar, Olson & Sims, 1981; Shimp et al., 1993). Because there are no direct relationships between consumers and sellers (or distributors), the paper studies the relation between these “intermediaries” (products) and consumers. It was not intended to try to link or associate this view of relation with the perspective of buyer–seller relationships. The relation between consumers and products is explained by the consumers’ beliefs concerning products’ attributes signifying some values, such as good function. The aim of market activities is to relate and position the product in the minds of consumers (Bernstein, 1984).

A connection points out the way in which an antecedent stimulates consumers’ perception of a product, and which then becomes related to other products in the same or other countries. Thus, a relation to a product is embedded in a perceptual context in which relations are connected to each other. Satisfaction or dissatisfaction in one relation affects other relations (see Ping, 1994). Correspondingly one can assume that any change in the attribute of one product in a country will become associated with other products from other countries or substitute products. According to Ping (1995), studying change through incidents enables a picture to be formed of the role of latent variables. Such relations are stored in the minds of actors and can also become relatively peripheral to the actor, but still have an impact on existing and
future relations (Hadjikhani, 1996). Research on the impact of one relation on others enhances our understanding of the growing literature on relationships in the consumer marketing field (Gruen, 1995) and will expand our understanding of consumer–product relations and country of origin. From interviews with a selected sample of Swedish consumers, the paper explores consumers’ cognitive perceptions of several products, both those produced in the domestic market and those from two other countries. Following a review of previous studies, the paper will present the notion of perceptual connection. The case of bovine spongiform encephalopathy (BSE), or as it is more commonly known, mad cow disease, and its negative impact on several products in the perception of Swedish consumers presents a good opportunity to analyse product-associated relations and elaborate on the notion of connection.

2. Previous studies

In recent years we have witnessed an increasing amount of research in consumer relationship marketing. In the context of the buyer–seller relationship (Dwyer, Schurr & Oh, 1987), channel relationships (Boyle, Dwyer, Robicheaux & Simpson, 1992), sales management (Swan & Nolan, 1985), and service marketing (Berry, 1983; Grönroos, 1990a,b; Woodside, Wilson & Milner, 1992), researchers have contributed significantly to the knowledge in this field. A broad range of concepts on the relation between consumers and buyers has been suggested from this research. At one end of the spectrum is the concept of strategic marketing actions seen in studies such as that of McKenna (1991) on strategic success, that of Sarath, Sager and Kumar (1996) on personal selling, and those of Jones (1994) and Sarath et al. (1996) on marketing by means of sellers’ influential activity. At the other end are the behavioural concepts found in such studies as that of Barrett-Lennard (1962) and Churchill, Ford and Walker (1990) on empathy and consumer perceptions.

In the field of dyadic relationships to capital goods, extensive studies have been undertaken to explain the relationship between the two identifiable nodes of consumers and sellers (Gundlach & Murphy, 1993; Leung, Wong & Tam, 1995). The dyadic approach was further developed by studies such as that of Dwyer et al., (1987), which concerned customer relationship development and its phases, and the research of Pettijohn, Pettijohn and Taylor (1995) on social bonds with consumers. The research in this field has contributed vastly to the knowledge of consumer–seller relationships from the point of view of social (Pettijohn et al., 1995) and economic exchanges (Johnson, Anderson & Fornell, 1995). At the same time, however, the research that has been undertaken has two specific limitations. One is that in delimiting the influence of one relation on others (i.e., on connections) it does not probe the effect of one relation on others in detail. Secondly, they stop short in their study of standardized products that offer consumers no opportunity for direct interaction with sellers. The view taken misses the role of the product as an “intermediary”, despite the fact that consumers do not meet the sellers or the sales force.

Whereas these studies promote our understanding of dyadic relationships, the subject of the embeddedness of dyadic relationships is has advanced to other research
fields, such as that of channel relationships (Frazier, 1983; Gundlach & Cadotte, 1994). Researchers in this field have elaborate views on distribution channels (Dietl & Knop, 1989; Ping, 1994), relationship in market channels (Brown, Lusch & Nicholson, 1995), strategies and communication means (Boyle et al., 1992), distribution and consumer satisfaction (Howell & Soucy, 1990), resource flow in the channels (Magrath & Hardy, 1987), and strategy connected to the process (Clinton & Closs, 1997). Their contribution to consumer marketing lies in the extension of dyadic relationships by concepts such as power and conflict (Gaski, 1984), power (Frazier & Summers, 1984) or the social glue which holds together interdependent channel members (Mohr & Nevin, 1990). In this dyadic relationship, however, consumers’ behaviour is studied as the antecedent (Gruen, 1995). A relationship considers the channel players’ vertically added value in the chain of resource flow, which ends with the channel before the consumers.

In filling this gap, the relations between products in the consumer’s perceptual map is implicitly pursued in fields such as product association and country of origin. For the first group, an association with product symbols (Javalgi, Cutler & White, 1994) or company logos (Brown & Dacin, 1997) is used to explain consumers’ behaviour. Some have extended the association view and connected it to the product attributes of quality and price (Geistfeld & Key, 1991). Others, such as Green (1974), presented a multidimensional model for the associated of features of the product in the consumer’s perception. One interesting contribution made by Mohr and Nevin (1990) is the implicit use of the consumer’s relation with products. Product attributes are presented as different glues binding consumers to the different products. Some have presented marketing actions in direct interaction with consumers; however, the association concept focuses on products and gives an active role to the consumers, who, Brown and Dacin (1997) suggested, can relate and judge the products as they become connected to a specific category. Others have suggested that relations develop in terms of company features, brand name, and trust (Shimp et al., 1993; Turley & Moore, 1995) or consumers’ attachments (East, 1993). One shortcoming in their contribution lies in the exploratory level of association (Roth & Romeo, 1992). The effects that association has on perception need to be considered in broad categories, for example, combining branded or groups of products together, rather than differentiating how perception of one specific product affects judgement of other specific products.

In a similar way, research conducted recently on country of origin assumed that consumers categorize and judge attributes based on market factors, such as their own familiarity with the product or the product’s reputation and country of origin (Samiee, 1994) and the countries where products are produced (Özsomer & Cavusgil, 1991; Papadopoulos, Heslop, Graby & Avlonitis, 1987). Within this field, researchers study effects throughout the observation of subjects, including, for example, perceived image of the country of origin for the category of products and countries (Samiee, 1994); the country’s image in relation to quality (Crawford & Garland, 1988; Hong & Wyer, 1989); product–country relations (Roth & Romeo, 1992); effects of the country of origin and brand name cues on consumer evaluation (Cattin, Jolibert & Lohnes, 1982; Han & Terpstra, 1988); and product evaluation with respect to single, explicit
and implicit cues (Lim, Darley & Summers, 1994). However, the results have been criticized as being too general, and some, such as Samiee (1994) and Nebenzahl, Jaffe and Lampert (1994) have argued that the issue is much more complex and requires greater specificity. These researchers, for example, make a distinction between country/brand name and the origin of the manufacturing country in the as perceived by the consumer. Another critical view presented more recently by Nebenzahl, Jaffe and Lampert (1997) constructed a model with reference to a specific product line, introducing linkages for product categories (see also Eroglu & Machleit, 1989; Gaedeke, 1973; Wang, 1978). One interesting contribution made by Nebenzahl et al. (1997) is the presumption that there is a link between the products and the image perceived of the country (see also Roth & Romeo, 1992), which provide premises for propositions concerning the interdependence of products in the perception of consumers.

3. A model for connection and propositions

The study of the connections between different products as perceived by the consumers is an extension of the concept of bonus products (Reiter, 1994; Schultz, Robinson & Petrisin, 1994; Soo Ong, Ho & Tripp, 1997) in consumers’ perception, and on linkages between products (Nebenzahl et al., 1997) The concept of “connection” is viewed in the social sciences as one dyadic relation being contingent on exchange or non-exchange in another. In a sense, one relation supports or obstructs another (Klein & Milardo, 1993; Ping, 1994). Thus, connection can be either positive or negative, depending on whether a focal relation affects the other relations positively or negatively (Duck, 1993). With the focus on an intermediary (i.e., the product) between producers and consumers, connection is the influence of the value in one “intermediary” relation on the values of other “intermediary” relations, which subsequently affects other associated relations. As Fig. 1 illustrates, the flow of infor-

Product Perception and Connection

![Diagram of Product Perception and Connection](image)

Fig. 1. Product perception and connection.
information and/or activities from an extrinsic cue—such as a company or the media—concerning product attributes of A makes consumers relate the attributes of product A to product B. Any change in the attributes of product A will influence customers, resulting in a change in their beliefs and behaviour, not only with reference to Product A, but also to product B. This will affect not only the producer of A, but also the producer of B, as consumers change their buying behaviour. Product B could belong to the same product category as A, or it could belong to a completely different one.

The glue in this value system comes in the form of the product attributes given by extrinsic cues. Information about negative market activity on product A flows to the consumers and they subsequently judge and transfer the value to the connected relations. That negative information makes positive or negative changes to the consumers’ beliefs about and expectations towards other products.

In this model, the positive/negative belief or expectation of consumers is explained by consumers’ trust in objects (Dasgupta, 1988; Gruen, 1995; Lewis & Weigert, 1985). Trust/mistrust is explained by the assessment of the perceived risk related to a product (Osterhus, 1997). Trust in a relation is the belief and expectation that an actor will take a risk (Gambetta, 1988; Johnson-George & Swap, 1982), and it is communicated through the actions of those in the market (cf. Anderson & Weitz, 1992; Blau, 1964; Crosby, Evans & Cowles, 1990). The elements of trust are embedded in a context integrating both market exchange and social exchange mechanisms (Bradach & Eccles, 1989; Osterhus, 1997; Ring, 1996). The combination of these two mechanisms conceptually is not contradictory (see ibid.). Rather, they are complementary, as, for example, when consumers combine the actual price and their expectation of the price when making an exchange. In the extreme cases of this continuum, one consumer is willing to associate high risk (low trust) with a high consideration for the market exchange (price), while another consumer gives high consideration to social exchange, with a low risk (high trust). It is a continuum in which one or a combination of the two elements is inevitable (Bradach & Eccles, 1989; Ring, 1996).

This is in line with one interpretation of trust that seems to subsume most conceptualizations of trust with a willingness to take risk (cf. Moorman, Deshpande & Zaltman, 1993; Barney & Hansen, 1994). The consumer may be deliberately opportunistic and take risk. For example, he may wish to prioritise in the short term and act on the price attribute, no matter what the risk contained in the purchase. The risk is factored into the price. In such a case, the consumer is a “price buyer” and disregards information about the quality of the product or producers. Correspondingly, in an exchange built on low risk, a consumer builds his or her confidence on quality attributes or producers, and is not willing to take the risk of buying cheaply (Hadjikhani & Seyed Mohammed, 1998). This is meant to capture the object’s actual reliability in terms of the risk as perceived by the consumer.

However, connection comprises an association of trust in one relationship and its transference to others. A willingness to take risks enhances the reliance of one relationship on another and, as a subjective personalized relation, permits others to become connected (Belenky, Clinchy, Goldberger & Tarule, 1986; Elbow, 1973;
Ring, 1996). Connection elevates the association of one product with other products belonging to the same category, thus, trust or mistrust is distributed merely on the basis of the product type. In this way, consumers develop stereotyped images of the products (Han & Terpstra, 1988; White & Cundiff, 1978). A negative perception of product $A$ affects the perceptual relation to other products. Other products can be matched (Roth & Romeo, 1992) or substituted, for example, beef products from different producers or countries. Another example is a product such as pork, which can be substituted for beef. Accordingly, the first proposition for one specific market is:

**Proposition 1:** (1). Trust in the focal product relation affects consumers’ trust relations with other products. Further, the higher the substitution of a product, the higher the effect of the focal perceptual relation.

The extension of connections from the product group in a specific market to a wider system includes factors such as producers (substantially studied in relationship-marketing) and products from other countries (mainly focused on in studies of country of origin). This is an assumption that is made because the perception that consumers divide the world of objects and actors and categorize them in order to achieve an efficient understanding (Cohen, 1982; Mervis & Rosch, 1981; Sujan, 1985). This process of categorizing enables consumers to evaluate an object identified in a particular category effortlessly and to interrelate it with other categories (Shimp et al., 1993). A belief in a product becomes associated with other products because of beliefs in the producers, or in the countries from which the products are imported—their country of origin. That is to say, trust in one level—in the focal relations—is connected to a larger perceptual network system. On the same lines, Baier (1986) discussed network trust, claiming that a given dyadic trust is constrained and affects other relations (Gruen, 1995). Hereby, by the rules of connection, the perception of a problematic issue in one relation can influence the perceptions of other products even though they are thought to be produced in other countries. Thus, a change in a belief in a product will not only affect the perception about the producers of that specific product, but will also impose a set of values on those producers who are considered to belong to other countries. For trust at the network level, the proposition is:

**Proposition 2:** (2). Trust in a focal relation affects trust in the producers differently because of their country of origin. The closer the producer is to a problematic issue geographically, the higher would be the mistrust in the connected relation.

Geographical distance in this model is taken to be the distance between the countries. This proposition extends the limits and includes the perceptual relations of the producers’ country of origin. Consumers have no direct relationships with these actors (producers), but are related to them through these products. The change in the consumers’ trust will introduce changes in their buying behaviour towards the focal products and also in their buying behaviour towards the products acting as substi-
tutes. Moreover, trust in the focal relation—that of consumer to product—is channelled and has an impact on the trust involved in the buying behaviour towards products from different countries. The change in the focal trust relation influences connected actors in the far reaches of the network because of the two interrelated factors of degree of substitution and country of origin. Accordingly, the next proposition is:

**Proposition 3:** Trust in a focal product relation spreads in the consumer’s trust towards other products in other countries. The greater the geographical distance and the lower the degree of substitution, the more trust there will be in purchasing connected products.

### 4. Data and method

Data were gathered on how Swedish consumers perceived the consequences of mad cow disease, which is a singular crisis of great importance to the meat market. Media coverage and public debate has changed customer perceptions of how safe it is to consume meat. There is, for instance, a ban on the import of British beef into many European countries. Swedish meat producers have not had any cases of mad cow disease, nor have there been any cases of Creutzfeldt-Jakob disease (CJD) in humans in Sweden. Nevertheless, Swedish consumers have been concerned by the news of mad cow disease. Thus, this situation provides an excellent opportunity to investigate propositions 1–3, since it is a singular incident (cf. Ping, 1995). A questionnaire was designed to investigate how customer perception is affected by a change in perception of a product and of producers, and how this change is influenced by geographical distance.

There were a number of available options by which to test the hypotheses, and we decided on one set of constructs that we considered suitable for this purpose. These constructs concerned three regions: Britain, the region where BSE originated, Sweden as the respondents’ home country, and Denmark as Sweden’s neighbour and supplier of 70–80% of its beef consumption before the CJD cases became known. Products may be repackaged in a country, but such an issue is unimportant since this study focuses on how respondents connect products and producers. There may also be other countries to select, but these three are probably sufficiently good to supply a view of the extent of the international connection of goods, as stated in proposition 2. The propositions also concern how consumers perceive related products: To study this we selected pork, as a four-legged non-beef meat product, and chicken, a bird. Because, being fowl, one would anticipate it to be less tarnished by prejudices against beef. This research design builds on other studies of consumers’ separation and categorization of objects (Cohen, 1982; Mervis & Rosch, 1981; Sujan, 1985). However, the application to meat is novel.

To explore the propositions it would have been desirable to measure trust and buying behaviour for British, Swedish, and Danish beef, chicken, and pork. However,
modelling such a complex structure is difficult because the variables are nested within one another. For present purposes, a far less elaborate model was required. We therefore elected to explore how British beef affects the following variables: Trust in British beef, Trust in British meat producers, Trust in Swedish meat producers, Trust in British pork, Trust in Danish pork and chicken. The causal relations between these constructs is only clear insofar as Trust in British Beef is the independent variable, and all the others are dependent.

Data were gathered in interviews with 261 respondents in Uppsala, Sweden (Kaptala-Nangy & Ljungren, 1997). Uppsala is located near Stockholm and is a town of some 140 000 inhabitants. People were selected from the phone directory at random, called and asked to participate. The interviews were conducted in and out of regular working hours, with the distribution between the times being equal. The number of missing values is 34, making the effective sample size 227. Listwise deletion was used, and pairwise deletion did not produce a different structural model, although some statistics were altered marginally.

Data was processed with LISREL (Jöreskog & Sörbom, 1993), which is a structural equation modelling technique frequently used in marketing research. LISREL uses both correlations and their associated error terms as two independent sources of information of variation in data. A structural model is a set of causally related constructs, which are higher order variables that capture the underlying commonalities of a number of indicators. The validity of a structural model is assessed in three ways:

- **Nomological validity** refers to the validity of the entire model. A model is constructed of interrelated causalities, which may counteract or reinforce one another. The key statistical estimates are the chi-square, which measures the goodness of fit between the model and the data, and a $p$-value, which is a test of a non-significant distance between data and model (Jöreskog & Sörbom, 1993, pp. 120–128). A number of other measures and estimates have been suggested for assessing nomological validity, but as Jöreskog and Sörbom pointed out (p. 121), they are all functions of the chi-square.

- **Discriminant validity** concerns the independence of constructs. Each construct should be independent of the others so that the parts of the structural model can be viewed as measuring different phenomena. The key statistical estimates are the $t$-values, $R^2$-values and factor loadings of indicators and coefficients between constructs (Jöreskog & Sörbom, 1993, pp. 5, 121). One construct should load on only one set of indicators and coefficients between constructs should be significant. A crude test of discriminant validity is to form an approximate confidence interval by taking the correlation estimate of two constructs $\pm$ twice the standard error (Jöreskog & Sörbom, 1993, p. 117). Should 1 be included in the confidence interval, there is no discriminant validity.

- **Convergent validity** refers to the fact that constructs should be homogenous entities. Again, $t$-values, $R^2$-values and factor loadings on indicators are the key statistical estimates. A construct should load on only one set of indicators. The load-
ings will show the relative contribution of the constructs to each indicator. As the model should be parsimonious, it is good to delete unnecessary indicators from it.

It is useful to assess validity in association with making a conceptual interpretation of the model. For instance, there may be conceptual reasons to retain an indicator within a construct, even though it could be deleted, on the basis of the statistical key measures.

Structural models put constructs in a specific relation to one another. However, the way in which all constructs relate to each other may also be of interest. To examine the relation between constructs, a measurement model can be designed without causal relations between constructs. The ideal result is that the measurement model is also nomologically, discriminantly and convergently valid.

Another issue concerning validity is the modification of structural models. It is common practice in marketing research to modify models, for instance, so that error terms are allowed to correlate. However, each such modification results in a considerable reduction in a model’s validity. In fact, Jöreskog and Sörbom stated that “It is a widespread misuse of structural equations modeling to include correlated error terms” (Jöreskog & Sörbom, 1993, p. 113). They also suggested that modifications should be interpreted substantively when included.

Do you mean to say the LISREL modelling can be done with two ends in view?, one being the confirmation of whether a theoretical model fits data, and the other being an exploration of a structural model based on data, not theory. In practice, confirmatory and exploratory analyses often blend in with each other (Bollen, 1989, pp. 228ff., Jöreskog & Sörbom, 1993, pp. 22ff.). Confirmation may be more useful when a theory is well developed, but exploration may be fruitful in extending established theory into uncharted territory. While the method for confirmation is reasonably well developed, little is known about how to do exploratory analysis. The most common recommendation is to use key statistics as a guide for substantive interpretations, and it is generally considered that theory and statistics converge in an acceptable model that also adds to theory (ibid.). At best, this is an interactive process where key statistics and existing theory help the researcher arrive at a deeper understanding of the phenomenon under study. However, despite the potential for gaining new knowledge, exploratory modeling has not received the attention it deserves, and there are almost no attempts to systematically describe how to do it.¹

The present research explores a tentative model that is based on propositions 1–3, which is modified based on both theory and statistics. Each change to the tentative model is discussed, and the covariance matrix is presented in an appendix so that other researchers can scrutinise the logic followed. The final results are presented

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¹ Anderson and Gerbing (1982) present an algorithm for purely data driven exploratory modeling. However, the application of the algorithm is very complicated and it lacks consideration for substantive interpretation along the way. And the possibility [advantages . . . are/benefits . . . are] of making a substantive interpretation during the course of the modeling is not considered.
in a structural model (see Fig. 2), which also provides a new insight into the perceptual product connection in the international market. The resulting model has not been modified and there are no correlated error terms. Furthermore, both the measurement and the structural model are nomologically, discriminantly and convergently valid, and the constructs and indicators are displayed in Table 1.

The construct trust in British beef consists of two indicators: The first asks if the consumer does not buy British beef because of mad cow disease. The scale has 7 points, ranging from fully agree to fully disagree. The second indicator asks what price reduction would be necessary for the consumer to buy British beef. Again, a 7-point scale is used, where six intervals range from 10% to 60%, with the last item being that the consumer would not buy the product, regardless of the price. Key statistics show that both indicators are valid constituents of the construct. The high factor loadings suggest that the indicators measure very similar things, which seems reasonable since they both focus on the purchase of British beef. These two indicators

![Diagram](image-url)

**Note:** Figures are factor loadings, with t-values in parentheses. Chi-square is 18.86, with 12 degrees of freedom, at a probability of 0.09.

**Fig. 2.** The structural model.
Table 1
The constructs and their indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Abbreviation in Fig. 2</th>
<th>Factor loading</th>
<th>t-value</th>
<th>R²-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust in British beef</td>
<td>BBBUY</td>
<td>0.89</td>
<td>13.28</td>
<td></td>
</tr>
<tr>
<td>The mad cow disease has convinced me not to buy British beef</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If British beef is available, how much do you think that the price should be reduced for you to consume it?</td>
<td>BBPRICE</td>
<td>0.80</td>
<td>11.96</td>
<td></td>
</tr>
<tr>
<td>Trust in British meat producers</td>
<td>BMP</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>The mad cow disease makes me think that British meat producers conceal facts about the disease to the consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust in Swedish meat producers</td>
<td>SWEMP</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>The mad cow disease makes me think that Swedish meat producers conceal facts about the disease to the consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust in British pork</td>
<td>BPORK</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>The mad cow disease makes me think that there is a risk of contamination in British pork</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust in Danish pork and chicken</td>
<td>DPBUY</td>
<td>0.94</td>
<td>15.02</td>
<td></td>
</tr>
<tr>
<td>The mad cow disease has convinced me not to buy Danish pork</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The mad cow disease has convinced me not to buy Danish chicken</td>
<td>DCBUY</td>
<td>0.88</td>
<td>15.02</td>
<td></td>
</tr>
</tbody>
</table>

...together are captured by a construct that concerns Swedish consumers’ trust in British beef. As mentioned earlier, a common definition of trust is the willingness to take risks (Moorman et al., 1993). The two indicators on the trust in British beef construct capture respondents’ willingness to take the risk of catching CJD.

Trust in British meat producers is a single item construct, where the indicator asks the respondent if British meat producers conceal facts about mad cow disease from the consumer. A 7-point scale was used and ranged from fully agree to fully disagree.

Trust in Swedish meat producers is also a single item construct that asks if Swedish meat producers conceal facts about mad cow disease. A 7-point scale was used, ranging from fully agree to fully disagree.

Trust in British pork is a single item construct that asks the consumer if British pork is contaminated. A 7-point scale was used, ranging from fully agree to fully disagree.

The construct Trust in Danish pork and chicken captures two indicators, the first whether the consumer buys Danish pork, and the other asks about purchases of chicken. Both indicators are valid for the construct. The factor loadings are very high, and almost equally large, suggesting that they are equally important for the construct.
5. Results

The hypothesized relations were translated to the mad cow case in a structural model with *Trust in British beef* as the independent construct, and the other constructs as dependent. However, such a model is not valid, which suggested that alternative solutions needed to be explored. As discussed above, there is almost no methodology for exploratory analysis. As a first step, this paper discusses each modification of the model in both conceptual and statistical terms. The propositions suggest that customers’ perceptions of products and producers in the international market are related. However, there is no existing knowledge of how consumers relate these dimensions. To shed new light on this issue, the exploratory modelling used modification indices of the LISREL program together with conceptual assessments guided by the hypotheses. Three changes were made in these explorations: First, the trust in British pork was set to affect trust in Danish pork and chicken buying, because the British pork was in the country of origin, which affects related products in another country (propositions 1 and 2). The LISREL-modification suggested it as the change that most improved the model. Second, British meat producers affect trust in Swedish meat producers because trust in producers in the country of origin is supposed to affect the trust in producers in other countries (proposition 2), and also because it was the most effective modification suggested by the program. Third, trust in British meat producers affects trust in British pork because pork is produced by meat producers in the country of origin (proposition 2), and because the modifications suggested it as the change that would bring about the greatest improvement once the previous two had been implemented. Once the three modifications were made, it turned out that the relations from trust in British beef to trust in Swedish meat producers and Danish pork and chicken were non-significant. They were, therefore, deleted from the model. The deletions may be interpreted as indicating that Danish pork and chicken are not considered to be substitutes for beef, and that, therefore, they are not directly affected by British beef, and that Swedish (domestic) producers are not directly affected by British beef. The exploratory modelling points to British producers and meat products being the only factors directly affected by BSE, and that non-British meat products and producers are affected only indirectly. There seems to be a distinct pattern whereby the BSE first spreads in one country, and then to other countries, for all meat products. The resulting structural model is presented in Fig. 2. The model is nomologically valid since the chi-square is 18.86 with 12 degrees of freedom and a probability of 0.09.

The results show that *Trust in British beef* has an effect on *Trust in British pork* (0.30 in Fig. 2). This result shows that the product British beef has an effect on trust in a related product from the same country, supporting proposition 1.

Trust in British beef also influences the *Trust in British meat producers* (0.48), which, in its turn, influences the *Trust in Swedish meat producers* (0.46). This supports proposition 2, which states that producers are affected by products, and that producers in different countries are perceived as being linked.

*Trust in Danish pork and chicken* is affected by trust in British pork (0.79), which shows that there is an effect on related products in a different country, as proposition 3 states.
In addition to the above results, trust in British meat producers has an effect on trust in British pork (0.21). This result supports the contention that meat producers affect products.

6. Discussion

The hypothesized results that trust in British beef has direct and separate effects on products, producers and countries could not be directly confirmed. Instead, exploration revealed a much more complicated picture, where trust in British beef affected a set of interconnected products and producers from both the country of origin and other countries.

The structural model in Fig. 2 shows a complicated web of how consumers perceive products and producers to be connected to each other. There is a way to estimate the total effects of trust in British beef on all other constructs. These total effects can be viewed as a measurement of the closeness of constructs. Total effects are 0.48 (7.10) on trust in British meat producers, 0.41 (5.87) on trust in British pork, 0.32 (5.27) on trust in Danish pork and chicken, and 0.22 (5.27) on trust in Swedish meat producers. The total effects can be seen as a scale for measuring the strength of customers’ perceived connections of the dependent constructs to British beef. Results suggest that British meat producers are more closely associated with British beef than to British pork. Danish pork and chicken are less strongly connected with British beef than British Pork. Swedish meat producers are those least connected with British beef.

However, the most striking result is that consumers perceive British producers and products to be primarily affected by the BSE. The fact that Danish products and Swedish producers are only indirectly affected shows that consumers perceive them to be significantly less likely to be contaminated by BSE. Thus, the country of origin seems to be a concept that consumers use to relate producers and products with each other.

Producers in the country of origin appear to have an effect on producers in other countries, and the same holds for products. This finding is in line with our propositions. However, consumers do not seem to perceive producers and products outside the country of origin to be connected. Apparently, products and producers seem to form an interrelated system within the country of origin, and this system affects producers and products to a varying degree in other countries.

7. Conclusions

This research has not focused on the buyer–seller relationship. Instead, its essential purpose was to attempt to study the relations between consumers and products in situations in which a direct relationship between buyer and seller was not possible (cf. Rice et al., 1996). The aim was to enrich the subject of connection in consumer marketing. In order to achieve this, we presented a model designed to observe how
consumers made perceptual connections between products and producers in different
countries. We do not propose the model of consumer relations. However, we do not
assume that consumers’ perceptions and their intention to purchase is simply a linear
function of the relation between the product and consumer, which is something that
could be explored by a study of just one factor, for example, the country of origin
or product evaluation. The belief in or intention to buy a product, as Samiee (1994)
and Nebenzahl et al. (1997) stated, is a complex issue in consumer marketing.

The results have shown that consumers perceive products (similar and substitute)
and producers (of similar and substitute products) in different countries to be con-
ected. This means that consumers’ buying intention in a country can be influenced by
their belief about the products and the producer in another country. However, the
interpretation of the results are in an embryonic stage, and point to a need for under-
standing why a change in circumstances that affects a product in one country has a
concomitant effect on innocent producers of a different product in another country.
Further studies of consumers’ perceptual connections are essential because the glo-
balization of international markets for consumer products has created interdepen-
dencies between products and producers.

This article has found different mechanisms inside and outside the country of
origin. Inside the country of origin, the findings are that both substitute products and
substitute producers are connected. This implies that consumers connect much of
what is produced and exported in one market. However, this result opens the field
for more research: For instance, there are probably boundaries to how substitutable
a product needs to be to be connected to the focal product. British cars are probably
not linked to British beef, but what is linked to British beef? Further research could
explore the reach of connectedness to a focal product.

Outside the country of origin consumers seem to connect substitute products with
other substitute products, and substitute producers with other substitute producers.
But consumers do not appear to connect substitute products and producers outside
the country of origin. Why is this so? Do consumers separate products from their
producers when they are closer to their domestic markets? Traditional brand name
research could well benefit from further exploring how consumers connect various
products and producers.

The differences in consumer connection inside and outside the country of origin
also encourages future research questions. What do consumers perceive as being
inside and outside? Are Japan and Thailand inside Asia for a European consumer?
Further research could extend research on cultural distance (Hofstede, 1991) to the
domain of consumer marketing and perceptual connections. In addition, there is a
need to find out why consumers perceive connections differently inside and outside
the country of origin. It seems likely that the boundary between inside and outside
varies with the degree of substitution of products, and how the producers are connec-
ted to the products. These and other further studies on the strength of connection
and their impact on consumers’ purchasing decisions will enhance our knowledge
of consumer behaviour in an international context.

The statistical tests used in this study indicated that it would be reasonable to
expect that there would be relationships between the factors: country of origin, types
of product, and producers. Consumers’ perceptions of specific products were found to be a result of interconnections between these factors, although, the value given to the attributes of a product was an outcome of the values associated with these factors. The value, then, represents the perception of the focal and connected products in the perceptual network. Further investigation into the role of these values as mediators of consumers’ perception of connectedness promises to give new insights into international consumer markets.

Use of the concept of connection leads to the conclusion that both products and producers in different international markets are perceived and linked by the consumers’ trust. Trust served as the glue to connect products and producers. The explanation is that, by their attributes, these factors affect the level of trust and mistrust in each relation and determine the strength of their connection. The strength lies in the nature of the trust measured by the attributes of preference, price and quality that are inherent in these factors (Hadjikhani & Seyed Mohammed, 1998). Thus, because of the rule of connection, trust in one relation affects trust in another. Furthermore, the existence of a strong relation was found to strengthen another, but weaken a third. The results pointed to the fact that trust can be transferred from one relation to another and its strength in each relation also depends on the closeness to the focal relation in the network. This means that the consumers’ confidence and their intention to buy a product is not just a pure perceptual relation with that specific product. It is also related to how close that product is to other products or producers.

References


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