Consumer expectations of the quality of pork produced in sustainable outdoor systems

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CONSUMER EXPECTATIONS OF THE QUALITY OF PORK PRODUCED IN SUSTAINABLE OUTDOOR SYSTEMS

SUSPORKQUAL Deliverable 22: Determination of the weighting of factors influencing attitudes to pork in different countries

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University of Uppsala
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The present report constitutes Deliverable 22 (“Determination of the weighting of factors influencing attitudes to pork in different countries”) within the SUSPORKQUAL project, completed as part of Work Package 7 (“Consumer demands and marketing possibilities of new pork qualities”).

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Aarhus, July 2004
Joachim Scholderer
EXECUTIVE SUMMARY

A total of 2451 consumers from Denmark, Sweden, France and the UK were recruited for participation in mail surveys in summer 2002. In Denmark and Sweden, samples were drawn on a nation-wide basis with quotas on region. In France and the UK, samples were drawn locally in the Clermont-Ferrand and South Bristol/Taunton regions.

The survey questionnaire included modules on meat consumption habits, quality expectations, attitudes and buying intentions, both with regard to pork produced in conventional indoor systems and with regard to pork produced in extensive outdoor systems.

In Denmark and Sweden, markets for fresh pork are dominated by consumers with very high consumption frequencies. In France and the UK, on the other hand, pork is merely one type of meat among others that are consumed with medium and low frequencies. Whilst supermarkets were the dominant channel in the other countries, most Swedish consumers bought fresh pork at the traditional butcher’s.

Although large segments of consumers (30-50%) stated higher purchase intentions for pork from outdoor systems than for conventional pork, results should be interpreted with caution. Since intention-behaviour consistency was found to be extremely low for pork in general, stated purchase intentions should also be discounted in the case of pork from outdoor production systems.

The most striking result in the present research was observed in relation to consumers’ quality expectations. Respondents had been asked to state their quality expectations for pork from pigs raised in extensive outdoor production systems as well as conventional indoor production systems. When compared for pork produced under the two different systems, a “halo” effect was found. Consumers gave substantially higher ratings to pork from outdoor production systems on all dimensions of expected quality apart from price.

Unrealistic expectations about a better taste of outdoor pork may become a serious problem. Related research has shown that disappointment can only be avoided when product qualities are achieved in outdoor and organic pork that come at least close to those of conventional pork.

Finally, consumers prefer as much information as possible on the label of pork products. Since influences at the point of sale, including the information on product labels, appear to be the major determinants of consumers’ pork purchases, the development of clear and credible certification and labelling systems is recommended.
INTRODUCTION

In food science as well as in product development, quality refers to aspects of a food product and the underlying production process that can be measured and documented in an objective manner. The quality that consumers associate with a food product is most often not equivalent to this objective quality assessment. To ensure that consumers find self-relevant value in new food qualities and transform the value perceived into willingness to pay and subsequent purchases of the product, it is crucial to understand that for consumers quality is a subjective concept whose evaluation is based on psychological processes that are influenced by individual factors such as the level of previous experience with the product category and cognitive competencies (Steenkamp, 1989).

Moreover, perceived quality affects different kinds of purchase decisions differently. The aim of the research reported here is to identify the internal structure and comparative level of consumer quality expectations regarding pork produced in sustainable outdoor systems. Furthermore, the research aims to assess how attitudes are formed from such expectations, and how attitudes interact with perceived expectations of others and the perceived availability of different pork products in the retail system in the formation of buying intentions, and which influence these buying intentions then have on actual buying behaviour, relative to situational factors at the point of purchase.

In the following, we will outline the theoretical framework used here, and review existing empirical evidence gathered in relevant previous research. The research questions will then be investigated on the basis of a cross-national survey in which altogether 2451 pork consumers from Denmark, France, Sweden and the UK participated. Finally, the results will be discussed and key conclusions will be presented.

Consumer quality perception

The quality perceived by consumers in food products comprises both sensory, health, convenience and process dimensions (Brunso, Fjord, & Grunert, 2002; Grunert, Bredahl & Brunso, 2004). Usually, these quality dimensions cannot be evaluated at the point of purchase, for some because their perception is contingent upon handling and ingesting the product in the home (this goes for the sensory and most convenience dimensions), for others because they are pure credence dimensions that cannot be perceived by consumers even upon consumption (this goes for most health, safety and process dimensions). Because of this, consumers’ quality perception process falls in two stages.

In a first step, expectations of product quality are formed based on evaluations of available cues regarded by the consumers as reliable indicators of the quality of the product. These quality cues can be intrinsic or extrinsic (Olson, 1976, 1978). Intrinsic quality cues are part of the physical product such as colour or fat content (Bredahl, Grunert & Fertin, 1998; Bryhni, Byrne, Rødbotten, Claudi-Magnussen, Agerhem, Johansson, et al., 2002; Hurling & Shepherd, 2003; Issanchou, 1996; Ngapo, Martin & Dransfield, 2004). Extrinsic quality cues are everything else that is related to the product,
such as price, packaging, or the information contained on labels – for example, a logo that certifies that the product is organic (Acebrón & Dopico, 2000; Bredahl, 2004; Dodds, Monroe & Grewal, 1991).

In a second step, the quality of the product is experienced when the product is ingested (Bredahl et al., 1998; Steenkamp & van Trijp, 1996). Assimilation and contrast theory assumes that consumers’ expectations operate as fuzzy anchors in their judgments of experienced quality (Sherif & Hovland, 1961). If the discrepancy between expectation and experience is small, it will fall into consumers’ latitudes of acceptance: incoming sensations are assimilated towards prior expectations. If the discrepancy between expectation and experience is high, it will fall into consumers’ latitudes of rejection: incoming sensations are contrasted away from prior expectations (Cardello, 1994; Olson & Dover, 1976).

Grunert, Larsen, Madsen, and Baadsgaard (1996) have suggested a Total Food Quality Model that comprises these relations. The model is shown in Figure 1. Building on previous research in the area, the model also shows on a general level how expected quality interacts with perceived costs to determine the purchase decision, how expected quality interacts with meal preparation and the objective (sensory) quality of the product to determine experienced quality, and, finally, how experienced quality affects future purchase decisions.

**Figure 1.** The Total Food Quality Model (adapted from Grunert, Larsen, Madsen, and Baadsgaard, 1996).
In the following, previous research will be reviewed that has investigated the different stages of the quality perception process in the context of pork from pigs raised in different production systems. Since qualitative research indicates that most consumers do not have a clear concept of the distinction between organic, free-range and indoor with outdoor-access systems in pig production (Bredahl & Poulsen, 2002; Scholderer, Nielsen, Bredahl, Claudi-Magnussen & Lindahl, 2004), consumer studies focusing any of the three systems will be included.

Consumer expectations of the quality of pork

Ngapo, Dransfield, Martin, Magnusson, Bredahl, and Nute (2004) report the results of focus groups with French, British, Swedish and Danish pork consumers. These focus groups were conducted as pilot research to the present study, aiming to obtain insights into the decision-making involved in the choice of fresh pork and attitudes towards today's pig production systems. Many positive perceptions of pork meat were evoked. Negative images of the production systems in use today were expressed, but rationalised in terms of consumer demands, market competition and by comparisons to earlier systems of production. Knowledge of production systems appeared of little consequence in terms of any meat market potential as several groups freely remarked that there was no link between their negative images of production methods and their purchase behaviour. The groups were clearly confused and mistrusted the limited information available at the point of purchase. Careful consideration should be given to meat labelling, in particular taking account of the evident consumer ethnocentrism, to assure that such information is targeted to enhance consumer confidence.

Bredahl and Poulsen (2002) report further analyses of the Danish focus groups that had been part of the Ngapo et al. (2004; see above) study. In this study, consumers defined high quality pork in terms of good taste, tenderness, juiciness, freshness, leaness, and healthiness. Above all, pork of good quality had to taste good. In addition, it should to be tender and juicy, fresh, lean and healthy. The participants generally found it difficult to evaluate the quality of meat at the point of purchase, particularly pre-packaged meat. The colour of the meat and the share of fat were important quality cues. Generally the participants looked for meat with little fat. To some, the colour of the fat and the colour of the meat were used as indicators of the freshness of the meat. Pieces of meat that were cut in unequal sizes and meat that was poorly trimmed were considered to be of low quality.

In addition, the results obtained by Bredahl and Poulsen (2002) revealed a clear perceptual link between the quality of pork and the applied production method, in which extensive outdoor production was generally perceived to result in higher quality than intensive indoor production. The factors which consumers perceived to influence quality included the transportation of the pigs, how the pigs were kept at the farm, what the pigs were fed, the use of growth enhancers, treatment of the live pigs at the slaughterhouse, the general welfare of the pigs, the use of medicine, the breed of pigs, the level of veterinary control, and the cooling of the meat. Despite the predilection for ‘welfare’ pork, meat from extensive production systems was rarely bought. Although it was
generally regarded as desirable, the focus group participants generally rejected the meat because they perceived it to be either too expensive or too difficult to obtain.

Figure 2. Associations of Danish consumers with perceived attributes of organic pork (adapted from Bech-Larsen & Grunert, 1998).

Another qualitative study by Bech-Larsen and Grunert (1998) gives insight into the attributes, desired consequences and personal values that consumers associate with the concept of organic pork. In this study, Danish consumers were interviewed individually, using the laddering method (Reynolds & Gutman, 1988). Consumers were asked to imagine that they had to choose between conventional and organic pork. After that consumers were asked to explain both the difference between the two types of meat and why the product attributes mentioned were important to them. The hierarchical value map for organic pork obtained from a content analysis of the responses is shown in Figure 2.

Results show that Danish consumers believe that good rearing conditions, natural feeding of the pig, no use of antibiotics, leaner meat, and generally higher quality are important attributes of organic pork, and that they associate these attributes with the attainment of the individual life values physical well-being, good health, and a long life. Again we find that the health aspect is an important quality to consumers, and that naturalness is closely related to health. There seems to be at least four different realms of considerations when choosing or not choosing organic pork: animal welfare, expectations regarding health, expectations regarding higher hedonic quality of organic pork, and also budget constraints. Budget constraints, more than availability, seem to be the most important barrier to increased purchase and consumption of organic pork.
Taken together, results from these qualitative studies suggest that consumers make a whole range of positive inferences from the label “organic”, and that these refer not only to concern for the environment and health, but also to animal welfare and even better taste. Secondly, the positive inferences may not necessarily lead to purchase when consumers do not believe that the trade-off between price and quality is sufficiently favourable.

From expectations to behaviour

Among the many behaviour regulation models advanced by contemporary psychology, Ajzen’s (1985, 1991) theory of planned behaviour has gained the most influence on applied research. At least 250 empirical studies have been published in peer-reviewed journals since 1985, with numerous applications in the fields of health promotion and nutrition (for reviews, see Conner & Sparks, 1996; Sparks, 1994) and multiple applications in the food domain as well (Berg, Jonsson and Conner, 2000; Povey, Wellens & Connor, 2001; Thompson & Thompson, 1996; Shepherd & Sparks, 1994). The theory assumes that the likelihood of a certain behaviour is a function of the individual’s conscious intention to perform it, which in turn is assumed to be a weighted average of three variables: (a) attitude toward the behaviour, determined by beliefs about its outcomes and evaluations of these outcomes, (b) subjective norm, determined by beliefs about the expectations of relevant others and motivation to comply, and (c) perceived behavioural control, determined by self-efficacy and beliefs about the controllability of facilitating and inhibitory factors.

Adapting the theory for the purposes of the present research, we shall assume that consumer quality expectations are the main determinant in the formation of the attitude component of the theory of planned behaviour (Brunso, Fjord & Grunert, 2002; Grunert, Bredahl & Brunso, 2004; Verbeke & Viane, 1999). Besides this, empirical applications of the theory allow to assess the relative influence of attitudinal (quality expectations), normative (perceived expectations of significant others, in particular consumers’ household members), and control factors (perceived availability of the products in the retail systems and their relative price) on the formation of buying intentions. Finally, as shown by Scholderer and Grunert (2001), the theory yields useful information even in situations where its predictive value is low: when consumers’ buying intentions are inconsistent with their actual behaviour, the inconsistency can be interpreted as an indication that the predominant role is played by situational factors at the point of sale, including shelf positioning, packaging, and labelling of the product.

Aims of the study

The aims of the present study are fourfold. The first aim is an assessment of purchasing and consumption habits regarding conventional pork, providing the necessary background information against which the market potential of new pork qualities has to be judged. Second, the theory of planned behaviour will be used for an assessment of the way consumers make their purchase decisions for pork. Third, quality expectations of consumers will be analysed in detail, including their internal structure, their relative level,
and their influence on the buying process. Finally, consumers’ preferences will be identified concerning the kinds of information that should be given on product labels.
METHOD

Participants and procedure

A total of $N = 2451$ consumers from Denmark, Sweden, France and the UK were recruited for participation in a mail survey in summer 2002. In Denmark and Sweden, samples were drawn on a nation-wide basis, with quotas imposed on region. In France and the UK, samples were drawn on a local basis in the regions Clermont-Ferrand and South Bristol/Taunton, respectively. Upon agreement to participate, respondents were screened according to two criteria: (a) at least one person in respondents’ households had to be a regular pork consumer, i.e. eat pork at least once a month, and (b) the respondent had to be the person mainly responsible for shopping and cooking in their household. By accident, screening criterion (b) was omitted in France. The different sampling methods were reflected by variations in response rates: 50% in Denmark, 17% in France, 47% in Sweden, and 14% in the UK. The final sample sizes were $N = 664$ in Denmark, 512 in France, 716 in Sweden, and 559 in the UK. Demographic characteristics are presented in Table 1.

Table 1. Sample characteristics.

<table>
<thead>
<tr>
<th></th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Denmark</td>
</tr>
<tr>
<td>Sample size</td>
<td>N</td>
</tr>
<tr>
<td>Response rate</td>
<td>%</td>
</tr>
<tr>
<td>Age</td>
<td>Mean</td>
</tr>
<tr>
<td>(SD)</td>
<td>(15.0)</td>
</tr>
<tr>
<td>Range</td>
<td>13-86</td>
</tr>
<tr>
<td>Gender</td>
<td>% female</td>
</tr>
<tr>
<td>Marital status</td>
<td>% single</td>
</tr>
<tr>
<td>Education</td>
<td>% compulsory</td>
</tr>
<tr>
<td></td>
<td>% upper secondary</td>
</tr>
<tr>
<td></td>
<td>% higher education</td>
</tr>
<tr>
<td>Employment status</td>
<td>% employed</td>
</tr>
<tr>
<td></td>
<td>% self-employed</td>
</tr>
<tr>
<td></td>
<td>% unemployed</td>
</tr>
<tr>
<td></td>
<td>% retired</td>
</tr>
<tr>
<td>Household size</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>(SD)</td>
</tr>
<tr>
<td>Presence of children</td>
<td>% households with</td>
</tr>
<tr>
<td>Number of children</td>
<td>Mean</td>
</tr>
<tr>
<td>(only when present)</td>
<td>(SD)</td>
</tr>
</tbody>
</table>
Measures

A master version of the questionnaire was developed in English and adapted for use in the other three countries by means of the back-translation method. In addition to demographic information, the questionnaire contained seven sections.

Meat purchasing and consumption habits in respondents’ households were measured with regard to pork as well as its closest substitutes. Regular consumption of meat in the household was measured by asking “Which of the meats listed below are regularly (at least once a month) consumed by at least one person in your household”, to be answered on dichotomous scales for pork, beef, chicken, and lamb, respectively. Frequency of personal consumption of meat was measured by asking “How often do you personally eat pork/beef/chicken/lamb?”, to be answered on seven-point scales with response alternatives “never”, “less than once in two months”, “once in two months”, “once a month”, “2-3 times a month”, “4-6 times a month”, and “more than 6 times a month”.

Usual place of purchase was measured by asking “Where do you usually buy pork/beef/chicken/lamb?”, with the response alternatives “supermarket”, “butcher’s”, “directly from the farmer”, “other” and “never buy it”. Frequency of purchase was measured by asking “When you buy meat, how often do you buy pork/beef/chicken/lamb?”, to be answered on seven-point scales with response alternatives “never”, “very seldom”, “rather seldom”, “sometimes”, “rather often”, “very often”, and “always”.

Attitudes towards buying pork from pigs produced in conventional and outdoor systems and related questions regarding subjective norm, perceived behavioural control, and purchase intention were included in the questionnaire as well, measuring the different constructs included in the theory of planned behaviour (Ajzen, 1985, 1991). Attitude towards the behaviour was measured the two items “Is it a bad idea or a good idea for you to buy pork from pigs reared conventionally” and “Is it a bad idea or a good idea for you to buy pork from pigs reared out-doors”, to be answered on seven-point scales ranging from “extremely bad idea” to “extremely good idea”.

Subjective norm was measured by the two items “Most people who are important to me think that I should buy pork from pigs raised conventionally the next time I buy pork” and “Most people who are important to me think that I should buy pork from outdoor pigs the next time I buy pork”, to be answered on seven-point scales ranging from “completely disagree” to “completely agree”. Perceived behavioural control was measured in terms of perceived availability by the two items “If I want to buy pork from pigs raised conventionally the next time I buy pork, I can easily do so” and “If I want to buy pork from outdoor pigs the next time I buy pork, I can easily do so”, to be answered on seven-point scales ranging from “completely disagree” to “completely agree”.

Behavioural intention was measured by the two items “The next time you buy meat, how likely is it that you will buy pork from pigs reared conventionally” and “The next time
you buy meat, how likely is it that you will buy pork from pigs reared out-doors”, to be answered on seven-point scales ranging from “extremely unlikely” to “extremely likely”.

Perceived importance of different quality parameters to respondents’ pork purchases was measured on twelve different dimensions that had been selected on the basis of previous research (Bredahl & Andersson, 1998; Bredahl et al., 1998; Grunert et al., 2004) and qualitative pilot research in the present project (Bredahl & Poulsen, 2002; Ngapo et al., 2004). Items were formulated as “When you buy pork, how important is it that it is lean”, “fresh”, “healthy”, “tender”, “juicy”, “produced in your country”, “tasty”, “does not contain hormones or medical residues”, “comes from pigs raised outdoors”, “comes from pigs raised at a farm nearby”, “is produced with consideration of animal welfare”, and “is cheap”. All importance items were answered on seven-point scales ranging from “unimportant” to “extremely important”.

Expected quality of pork from pigs raised in different systems was measured according to the same quality parameters, apart from “raised outdoors”. With respect to conventional pork, consumers were asked “When you buy pork from pigs raised conventionally, how likely is it that it is lean”, “fresh”, “healthy”, “tender”, “juicy”, “produced in your country”, “tasty”, “does not contain hormones or medical residues”, “comes from pigs raised at a farm nearby”, “is produced with consideration of animal welfare”, and “is cheap”.

With respect to outdoor pork, consumers were asked “Compared to pork from pigs raised conventionally, how likely do you consider it to be that pork from pigs reared outdoors is leaner”, “fresher”, “healthier”, “more tender”, “more juicy”, “more often produced in your country”, “tastier”, “more often free from hormones or medical residues”, “comes from pigs raised at a farm nearby”, “is more often produced with consideration of animal welfare”, and “is cheaper”. All quality expectation items were answered on seven-point scales ranging from “extremely unlikely” to “extremely likely”.

Finally, preferences for information that should be included on labels were measured by asking respondents to indicate, for each of the information items “Quality grading of pork”, “Fat content”, “Slaughtering date”, “Country of origin”, “Method of production”, “Length of transport to slaughter”, “The farm on which the animal was raised”, “The age of the animal at time of slaughter”, and “What food the animal was fed”, whether the item “Is available and important to me”, “Is available but unimportant to me”, “Is not available but would be important if available”, or “Is not available and would not be important if available”. The two “important” and the two “unimportant” categories were collapsed for the analysis, respectively.
**RESULTS**

The results of the survey will be presented in several steps. First, consumers’ buying and consumption habits will be described regarding conventional pork, giving the necessary background information against which consumer expectations regarding outdoor pork have to be judged. Then, Ajzen’s (1985, 1991) theory of planned behaviour will be used for an assessment of the way consumers make their purchase decisions for pork. After that, the quality expectations of consumers will be analysed in more detail. This will be done with regard to the relative importance consumers themselves assign different dimensions of pork quality, but also with regard to the relative importance these dimensions have statistically when they are being related to overall attitudes towards conventional as well as outdoor pork.

A halo effect that was detected in consumers’ expectation regarding outdoor pork will be investigated more closely afterwards. Integrating the results presented until then, a model will be estimated that predicts under which conditions consumers will form stronger intentions to buy outdoor pork than conventional pork. Finally, consumers’ preferences will be looked at regarding the way pork should be labelled.

**Pork consumption habits**

The four countries in which the survey was conducted differ markedly in terms of their meat consumption habits. Table 2 (upper part) shows average consumption frequencies in each country for pork as well as its closest substitutes, beef, chicken and lamb. A multivariate analysis of variance with country as a between-subjects factor and meat type as a within-subjects factor revealed highly significant differences in terms of the average consumption of meat in general ($F[3, 2056] = 258.38, p < .001$) as well as the relative importance of pork as compared to other types of meat ($F[9, 4999] = 160.32, p < .001$).

Meat consumption in general as well as pork consumption in particular were highest in Denmark, followed by Sweden, the UK, and France. The dominance of pork over its closest substitutes is most pronounced in Sweden, where the average number of pork meals per person and month is 0.72 times as high as the combined number of meals prepared from its three closest substitutes. The same ratio is 0.68 in Denmark (very close to the ratio in Sweden), but only 0.38 in France and 0.33 in the UK, indicating that pork has a certain dominance as the prototypical type of meat in the Danish and Swedish food cultures, whilst being one type of meat among several others in the more varied food cultures of France and the UK.

A comparison of the distributions of consumption frequency across the four countries supports this conclusion (Kruskal-Wallis $\chi^2[3] = 622.13, p < .001$). Figure 3 shows that frequent consumers of pork clearly dominate the Danish market, with 47.7% of respondents indicating that they eat pork more than six times a month. The distribution is similar but slightly less skewed towards very high consumption frequencies in Sweden.
Table 2. Cross-national differences in consumption habits: consumption frequency and main place of purchase for pork and its closest substitutes.

<table>
<thead>
<tr>
<th></th>
<th>Country</th>
<th>Denmark</th>
<th>France</th>
<th>Sweden</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumption frequency (meals per month)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pork</td>
<td>Mean (SD)</td>
<td>5.50 (2.75)</td>
<td>1.41 (0.91)</td>
<td>4.27 (2.84)</td>
<td>2.54 (2.46)</td>
</tr>
<tr>
<td>Beef</td>
<td>Mean (SD)</td>
<td>5.45 (2.55)</td>
<td>1.71 (0.87)</td>
<td>4.03 (2.71)</td>
<td>2.57 (2.52)</td>
</tr>
<tr>
<td>Chicken</td>
<td>Mean (SD)</td>
<td>4.43 (2.71)</td>
<td>1.86 (0.82)</td>
<td>3.81 (2.57)</td>
<td>4.65 (2.74)</td>
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<tr>
<td>Lamb</td>
<td>Mean (SD)</td>
<td>0.52 (1.05)</td>
<td>0.79 (0.74)</td>
<td>0.47 (1.13)</td>
<td>2.03 (2.20)</td>
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<tr>
<td><strong>Main place of purchase (% of purchasers)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pork</td>
<td>Supermarket</td>
<td>74.3</td>
<td>79.0</td>
<td>12.8</td>
<td>82.8</td>
</tr>
<tr>
<td></td>
<td>Butcher</td>
<td>14.1</td>
<td>19.1</td>
<td>63.8</td>
<td>11.2</td>
</tr>
<tr>
<td></td>
<td>Farm</td>
<td>11.6</td>
<td>1.9</td>
<td>23.4</td>
<td>6.0</td>
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<td>Beef</td>
<td>Supermarket</td>
<td>71.9</td>
<td>88.2</td>
<td>16.3</td>
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<td>10.1</td>
<td>57.1</td>
<td>13.4</td>
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<tr>
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<td>1.7</td>
<td>26.5</td>
<td>4.5</td>
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<td>Supermarket</td>
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<td>44.5</td>
<td>22.2</td>
<td>81.4</td>
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<td></td>
<td>Butcher</td>
<td>4.2</td>
<td>54.5</td>
<td>22.2</td>
<td>8.6</td>
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<tr>
<td></td>
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<td>1.9</td>
<td>1.0</td>
<td>55.6</td>
<td>10.0</td>
</tr>
<tr>
<td>Lamb</td>
<td>Supermarket</td>
<td>74.6</td>
<td>78.7</td>
<td>20.0</td>
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</tr>
<tr>
<td></td>
<td>Butcher</td>
<td>17.6</td>
<td>19.5</td>
<td>64.4</td>
<td>21.9</td>
</tr>
<tr>
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<td>Farm</td>
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<td>1.8</td>
<td>15.6</td>
<td>6.2</td>
</tr>
</tbody>
</table>

In France, the market is dominated by a large group of consumers (77% of respondents) who eat pork at medium frequencies, between one and three times a month, whilst virtually none of the respondents (0.2%) indicated a frequent-consumer status of more than three times a month. The UK distribution, finally, was irregularly shaped: a sizable group of 13.9% of respondents indicated that personally, they never consumed pork. Apart from this special segment, the distribution appears almost bell-shaped, with a dominance of medium consumption frequencies, and a sizable segment of 10.2% of respondents who indicate a frequent consumer status of more than 6 times a month.

Sweden has a special status concerning the channels through which pork is sold to consumers (Kruskal-Wallis $\chi^2[3] = 90.21, p < .001$). The lower part of Table 2 lists the dominant places of purchase for pork and its closest substitutes. Supermarkets represent the dominant channel for all pork sales to consumers in Denmark, France and the UK, with roughly three quarters of the respondents who buy meat for their households indicating that they typically purchase their pork there. In Sweden, on the other hand, the traditional butcher’s is the typical place of purchase, followed by direct purchases from farms.
Determinants of buying intentions and behaviour

In order to identify the main drivers of consumers’ pork purchases, the structure of the attitude-to-behaviour process was modelled on the basis of the theory of planned behaviour (TPB; Ajzen, 1985, 1991). The theory assumes that the likelihood of a certain behaviour is a function of the individual’s conscious intention to perform it, which is in turn assumed to be a weighted average of three variables: (a) attitude toward the behaviour, determined by beliefs about its outcomes and evaluations of these outcomes, (b) subjective norm, determined by beliefs about the expectations of relevant others and the individual’s motivation to comply, and (c) perceived behavioural control, determined by self-efficacy and beliefs about the controllability of facilitating and inhibitory factors.

In the present study, four kinds of target behaviours were considered: the purchasing of conventional pork, serving as a benchmark assessment, and the purchasing of outdoor pork, the actual behaviour of interest, and similarly, the consumption of conventional pork and the consumption of outdoor pork. Measures of the TPB variables were collected separately for the four target behaviours. Since outdoor pork has only achieved negligible market penetration in the four countries where the survey was conducted, actual purchase/consumption frequencies could not be included for outdoor pork. Conceptual models of both attitude-to-behaviour processes are shown in Figure 4.
The path models were estimated separately within each country (using procedure REGPATH in STATA 8.0). Standardised path coefficients and squared multiple correlation for each dependent variable are displayed in Table 3.

Concerning the models for conventional pork (upper part of Table 3), it is intriguing how low the intention-behaviour consistencies are: in all four countries, the squared multiple correlations for both behaviour indicators (consumption frequency and purchasing frequency) remained below $R^2 = .10$, indicating that less than 10% of the variation in these indicators can be explained by the model. France was the most extreme case, with 1% or less of the variation in the behaviour indicators explained by the model. Unlike in the other countries, purchase intention in France had no significant effects on behaviour.

The low consistency of intentions and behaviour is not exactly surprising. First, the consumption frequency variables represent differences in the target of the behaviour relative to its alleged determinant (behavioural intention is targeted at purchase rather than consumption). This conflicts with the general recommendation to ensure coherence in time, context and target in empirical applications of the expectancy-value based behavioural models and clearly reduced the explanatory power of the model (Ajzen & Fishbein, 1980). Moreover, conventional pork is virtually omnipresent in European food cultures. Hence, it can be assumed that most consumers have formed stable purchasing

Figure 4. Theory of planned behaviour operationalization, separately for conventional pork (upper part) and outdoor pork (lower part).
and consumption habits. When stable habits exist, the explicit formation of buying intentions, as assumed by the theory of planned behaviour, is not really necessary any more to trigger observable behaviour (Ajzen & Fishbein, 2001). Instead, the transformation of a habitual buying tendency into an actual purchase of conventional pork depends on situational factors at the point of sale, including the packaging of the pork, its presentation relative to substitute products, and price promotions. Similarly, the insignificance of perceived behavioural control as a predictor of behaviour comes as no surprise. Conventional pork is permanently available to consumers in the countries where the survey was conducted. Therefore, no effects could be expected apart from indirect ones mediated by behavioural intention.

| Table 3. Theory of planned behaviour: path analysis results for conventional pork and outdoor pork (standardised path coefficients, estimated separately within countries). |
|---|---|---|---|---|
| Dependent variable | Independent variables | Denmark | France | Sweden | UK |
| Behaviour: Frequency of conventional pork consumption | Behavioural intention | .22*** | .04 | .18*** | .17** |
| | Perceived behavioural control | -.01 | .06 | .05 | .03 |
| | $R^2 = .05$ | $R^2 = .01$ | $R^2 = .04$ | $R^2 = .03$ |
| Behaviour: Frequency of conventional pork purchasing | Behavioural intention | .17*** | .01 | .26*** | .30*** |
| | Perceived behavioural control | -.03 | .04 | .00 | -.02 |
| | $R^2 = .03$ | $R^2 = .00$ | $R^2 = .07$ | $R^2 = .09$ |
| Behavioural intention: Intention to buy conventional pork | Attitude towards the behaviour | .51*** | .33*** | .43*** | .56*** |
| | Subjective norm | .10*** | .09 | .00 | .10* |
| | Perceived behavioural control | .18*** | .19*** | .16*** | .08 |
| | $R^2 = .35$ | $R^2 = .16$ | $R^2 = .19$ | $R^2 = .35$ |
| Behavioural intention: Intention to buy outdoor pork | Attitude towards the behaviour | .35*** | .26*** | .24*** | .38*** |
| | Subjective norm | .24*** | .39*** | .14*** | .22*** |
| | Perceived behavioural control | .23*** | .03 | .33*** | .25*** |
| | $R^2 = .35$ | $R^2 = .30$ | $R^2 = .20$ | $R^2 = .29$ |

Note. *p < .05, **p < .01, ***p < .001.
Intentions to buy conventional pork, on the other hand, could be reasonably well predicted in Denmark and the UK, and to a somewhat lesser extent also in Sweden and France. In all countries, attitude was the strongest predictor of intention. Subjective norm (i.e., the expectations of other household members, family or friends as perceived by the respondent) had relatively little influence but was still significant in Denmark and the UK. Perceived behavioural control (here operationalised in terms of the perceived availability of pork) had significant medium-size effects in Denmark, France and Sweden, but not in the UK.

When compared to this benchmark assessment, the model for outdoor pork showed some marked differences. In all countries, subjective norm (the perceived expectations of others) had far stronger effects on behavioural intention, and respondents’ own attitudes had far weaker effects than was the case for conventional pork. Apparently, buying outdoor pork has the characteristics of a socially desirable behaviour. This can be interpreted in two ways. Respondents may engage in a form of impression management, attempting to project a more positive image by showing concern with animal welfare. Alternatively, respondents may perceive outdoor pork as being healthier or more wholesome than conventional pork, thereby perceiving themselves to act in a more responsible way towards their spouses or children when planning to purchase it for a family meal.

Perceived behavioural control had somewhat higher effects on intention as well, at least in Denmark, Sweden and the UK. To some degree, consumers seem to be aware of the fact that limited availability may pose a far more serious barrier to their planned purchases of outdoor pork than it would pose to purchases of conventional pork.

Whilst the path analysis results above give an indication of the structural importance of the different model variables as drivers of the target behaviour, a comparison of means related to the pork types investigated here (conventional and free range) indicates the relative level or position of the pork types in consumers’ attitude structures. To investigate this, a doubly multivariate analysis of variance was conducted within each country, with pork type as a within-subjects factor and attitude toward the behaviour, subjective norm, perceived behavioural control, and behavioural intention as dependent measures. The multivariate effect of meat type was highly significant in all countries (Denmark: $F[4, 502] = 158.88, p < .001$; France: $F[4, 405] = 62.58, p < .001$; Sweden: $F[4, 533] = 240.56, p < .001$; UK: $F[4, 374] = 169.82, p < .001$).

Univariate differences between the two meat types were inspected with respect to all model variables to help interpretation (Table 4). Concerning attitude toward the behaviour, subjective norm, and perceived behavioural control, the results were consistent across countries (all univariate differences highly significant at $p < .001$): respondents indicated more positive attitudes towards outdoor pork, stronger subjective norms (influence of others such as family and friends), but lower perceptions of behavioural control (perceived availability of the meat). In contrast to this, differences in behavioural intention were not consistent across countries.
In France and the UK, intention to buy was significantly higher for outdoor pork than for conventional pork ($p < .001$). No significant difference could be found in Sweden. In Denmark, however, respondents reported significantly lower intentions to buy outdoor pork than they reported for conventional pork ($p < .001$).

**Table 4.** Theory of planned behaviour: mean ratings (standard deviations in parentheses) for conventional pork and outdoor pork on model variables.

<table>
<thead>
<tr>
<th>Country</th>
<th>Behavioural intention</th>
<th>Attitude towards the behaviour</th>
<th>Subjective norm</th>
<th>Perceived behavioural control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conventional pork</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>4.70</td>
<td>3.98</td>
<td>3.32</td>
</tr>
<tr>
<td></td>
<td>(SD)</td>
<td>(1.30)</td>
<td>(1.27)</td>
<td>(1.40)</td>
</tr>
<tr>
<td></td>
<td>Outdoor pork</td>
<td>Mean</td>
<td>4.43</td>
<td>5.47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(1.40)</td>
<td>(1.17)</td>
</tr>
<tr>
<td></td>
<td>Conventional pork</td>
<td>Mean</td>
<td>4.43</td>
<td>4.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(1.40)</td>
<td>(1.46)</td>
</tr>
<tr>
<td></td>
<td>Outdoor pork</td>
<td>Mean</td>
<td>4.91</td>
<td>5.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(1.45)</td>
<td>(1.38)</td>
</tr>
<tr>
<td></td>
<td>Conventional pork</td>
<td>Mean</td>
<td>4.38</td>
<td>3.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(1.25)</td>
<td>(1.40)</td>
</tr>
<tr>
<td></td>
<td>Outdoor pork</td>
<td>Mean</td>
<td>4.38</td>
<td>4.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(1.22)</td>
<td>(1.43)</td>
</tr>
<tr>
<td></td>
<td>Conventional pork</td>
<td>Mean</td>
<td>4.76</td>
<td>5.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(1.54)</td>
<td>(1.40)</td>
</tr>
<tr>
<td></td>
<td>Outdoor pork</td>
<td>Mean</td>
<td>4.76</td>
<td>4.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(SD)</td>
<td>(1.54)</td>
<td>(1.59)</td>
</tr>
</tbody>
</table>

**Stated importance of quality dimensions**

In the above analysis, consumer evaluations of different pork types were analysed in terms of the overall attitudes consumers have towards buying them. Expectancy-value models of attitude structure hold that such overall attitudes, at least where complex behaviours are concerned, are the product of (a) a consumer’s expectations regarding the
outcome of the behaviour, and (b) evaluations of the importance of these outcomes to this particular consumer. Based on previous research as well as qualitative pilot research in the present project (Bredahl et al., 1998; Bredahl & Poulsen, 2002; Grunert et al., 2004; Ngapo et al., 2004), a number of quality dimensions had been identified on which consumers form expectations about different types of pork. These included leanness, freshness, healthiness, tenderness, nutritional quality, juiciness, taste domestic origin, absence of hormone and drug residues, nearby production, animal welfare, and low price.

Table 5. Stated importance of quality dimensions for choice of pork in general: mean ratings (standard deviations in parentheses).

<table>
<thead>
<tr>
<th>Quality Dimension</th>
<th>Country</th>
<th>Denmark</th>
<th>France</th>
<th>Sweden</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>Leanness</td>
<td></td>
<td>5.37</td>
<td>5.29</td>
<td>4.89</td>
<td>5.08</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(1.34)</td>
<td>(1.62)</td>
<td>(1.24)</td>
<td>(1.38)</td>
</tr>
<tr>
<td>Freshness</td>
<td></td>
<td>6.41</td>
<td>6.50</td>
<td>6.38</td>
<td>6.01</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(0.77)</td>
<td>(0.92)</td>
<td>(0.82)</td>
<td>(1.33)</td>
</tr>
<tr>
<td>Healthiness</td>
<td></td>
<td>6.14</td>
<td>n.a.</td>
<td>6.17</td>
<td>6.03</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(0.96)</td>
<td>n.a.</td>
<td>(0.99)</td>
<td>(1.35)</td>
</tr>
<tr>
<td>Tenderness</td>
<td></td>
<td>6.11</td>
<td>6.38</td>
<td>5.83</td>
<td>5.71</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(0.84)</td>
<td>(0.89)</td>
<td>(1.00)</td>
<td>(1.32)</td>
</tr>
<tr>
<td>Nutritional quality</td>
<td></td>
<td>5.91</td>
<td>6.40</td>
<td>5.86</td>
<td>5.82</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(1.01)</td>
<td>(1.03)</td>
<td>(1.09)</td>
<td>(1.31)</td>
</tr>
<tr>
<td>Juiciness</td>
<td></td>
<td>5.99</td>
<td>5.52</td>
<td>5.81</td>
<td>5.47</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(0.92)</td>
<td>(1.53)</td>
<td>(1.02)</td>
<td>(1.34)</td>
</tr>
<tr>
<td>Taste</td>
<td></td>
<td>6.41</td>
<td>6.65</td>
<td>6.24</td>
<td>5.90</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(0.69)</td>
<td>(0.77)</td>
<td>(0.82)</td>
<td>(1.28)</td>
</tr>
<tr>
<td>Domestic origin</td>
<td></td>
<td>5.62</td>
<td>5.95</td>
<td>5.90</td>
<td>5.19</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(1.36)</td>
<td>(1.37)</td>
<td>(1.33)</td>
<td>(1.54)</td>
</tr>
<tr>
<td>No hormone and drug residues</td>
<td></td>
<td>6.45</td>
<td>5.83</td>
<td>6.39</td>
<td>5.86</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(1.01)</td>
<td>(1.44)</td>
<td>(1.05)</td>
<td>(1.46)</td>
</tr>
<tr>
<td>Nearby production</td>
<td></td>
<td>3.54</td>
<td>5.57</td>
<td>4.64</td>
<td>4.80</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(1.68)</td>
<td>(1.45)</td>
<td>(1.35)</td>
<td>(1.30)</td>
</tr>
<tr>
<td>Animal welfare</td>
<td></td>
<td>5.73</td>
<td>n.a.</td>
<td>5.97</td>
<td>5.84</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(1.16)</td>
<td>n.a.</td>
<td>(1.06)</td>
<td>(1.36)</td>
</tr>
<tr>
<td>Low price</td>
<td></td>
<td>4.07</td>
<td>5.09</td>
<td>4.60</td>
<td>4.17</td>
</tr>
<tr>
<td>(SD)</td>
<td></td>
<td>(1.52)</td>
<td>(1.69)</td>
<td>(1.25)</td>
<td>(1.23)</td>
</tr>
</tbody>
</table>

In the French version of survey questionnaire, healthiness and animal welfare had accidentally been omitted. Means and standard deviations of consumers’ ratings of the relative importance of these dimensions are listed in Table 5. A multivariate analysis of variance was conducted within each country, with quality dimensions as a within-subjects factor. Ratings differed significantly between dimensions (Denmark: $F[11, 567] =$

In general, the stated importance of all dimensions was high (Table 5). With the exception of nearby production, which Danish consumers considered not so important, all dimensions received average importance ratings above the midpoint of the response scale (which was 4). In Denmark and Sweden, absence of hormone and drug residues received the highest importance ratings, followed by freshness, taste and healthiness. In the UK, healthiness was considered most important, followed by freshness, taste and absence of hormone and drug residues. Since healthiness and animal welfare had been omitted in the French part of the survey, the data collected there are not comparable to the other countries in terms of the stated relative importance of the different dimension. In France, taste received the highest importance ratings, followed by freshness, nutritional quality, and tenderness of the meat. In all four countries, the relatively lowest importance ratings were assigned to price and nearby production.

**Estimated importance of quality dimensions: conventional pork**

An alternative way of assessing the relative importance of the different quality expectation dimensions for consumers’ overall attitudes is to estimate their effects empirically. This was done by collecting ratings from consumers of the expected quality of conventional pork, separately for each of the quality dimensions listed above, and using them in a multiple regression analysis with overall attitude towards conventional pork as the criterion. The standardised regression weights from this analysis can be interpreted as empirical estimates of the relative importance of the dimensions in the formation of consumers’ overall attitudes towards conventional pork. The analysis was conducted separately for each country. Results are shown in Table 6.

In Denmark, Sweden and the UK, the overall amount of variance explained by all quality expectation dimensions together was moderate but highly significant, ranging from 22% to 25% (Denmark: unadjusted \( R^2 = .25, F[12, 651] = 18.37, p < .001 \); Sweden: unadjusted \( R^2 = .22, F[12, 703] = 16.81, p < .001 \); UK: unadjusted \( R^2 = .25, F[12, 546] = 14.73, p < .001 \). In France, where the dimensions healthiness and animal welfare had been omitted, the amount of variance explained in consumers’ overall attitudes was a mere 3% (unadjusted \( R^2 = .03, F[10, 501] = 1.31, n.s. \)).

In Denmark, Sweden and the UK, expectations regarding animal welfare were the most important predictor of consumers’ overall attitudes. The effect was moderately positive in size and highly significant in all three countries, even though the target product was conventional pork (and not outdoor pork, where it would normally be expected). Expectations of healthiness were another important predictor in the same three countries, with small but significant effects in Denmark and Sweden and a moderately sized effect in the UK. In Denmark, absence of hormone and drug residues had a small but significant positive effect as well.
Table 6. Estimated importance of quality expectation dimensions for overall attitude towards conventional pork (standardised regression coefficients, estimated separately within countries).

<table>
<thead>
<tr>
<th>Country</th>
<th>Denmark</th>
<th>France</th>
<th>Sweden</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leanness</td>
<td>.07</td>
<td>.01</td>
<td>.02</td>
<td>-.04</td>
</tr>
<tr>
<td>Freshness</td>
<td>.04</td>
<td>-.02</td>
<td>.01</td>
<td>-.20**</td>
</tr>
<tr>
<td>Healthiness</td>
<td>.15*</td>
<td>n.a.</td>
<td>.17**</td>
<td>.28***</td>
</tr>
<tr>
<td>Tenderness</td>
<td>.00</td>
<td>-.01</td>
<td>-.01</td>
<td>.05</td>
</tr>
<tr>
<td>Nutritional quality</td>
<td>.01</td>
<td>.06</td>
<td>.11</td>
<td>.10</td>
</tr>
<tr>
<td>Juiciness</td>
<td>-.07</td>
<td>-.10</td>
<td>.05</td>
<td>-.06</td>
</tr>
<tr>
<td>Domestic origin</td>
<td>-.13***</td>
<td>-.07</td>
<td>-.04</td>
<td>-.04</td>
</tr>
<tr>
<td>Taste</td>
<td>.11</td>
<td>.16*</td>
<td>-.05</td>
<td>.02</td>
</tr>
<tr>
<td>No hormone and drug residues</td>
<td>.12**</td>
<td>-.03</td>
<td>.03</td>
<td>-.02</td>
</tr>
<tr>
<td>Nearby production</td>
<td>-.11**</td>
<td>-.04</td>
<td>-.02</td>
<td>-.01</td>
</tr>
<tr>
<td>Animal welfare</td>
<td>.30***</td>
<td>n.a.</td>
<td>.28***</td>
<td>.36***</td>
</tr>
<tr>
<td>Low price</td>
<td>-.03</td>
<td>-.03</td>
<td>-.02</td>
<td>-.07</td>
</tr>
</tbody>
</table>

\[ R^2 = .24 \quad R^2 = .01 \quad R^2 = .21 \quad R^2 = .23 \]

Note. *p < .05, **p < .01, ***p < .001. Squared multiple correlations are adjusted.

Interestingly, expectations of domestic origin as well as nearby production had negative effects in Denmark – in other words, consumers had more negative attitudes towards pork that was produced in their own region of residence. Considering the industrial scale of Danish hog production, this is not altogether surprising (despite it limited geographical extent, Denmark is among the world’s ten largest producers, with over 20 million pigs slaughtered annually (Danske Slagterier, 2004)). Regularly confronted with the consequences of high-yield production, Danish consumers may have developed critical opinions about them. Another surprising effect was observed in the UK, where expectations of freshness had a moderately sized negative influence in consumers’ overall attitudes. Given the strong position of processed pork in the UK market, consumers may simply have misunderstood the question as being about fresh versus processed pork, and not fresh versus not so fresh unprocessed pork, as intended.

To check for consistency between stated importance of the quality dimensions (as analysed in the previous section) and estimated importance (as analysed in this section), the four sets of means for stated importance (from Table 5) and the four sets of standardised regression coefficients for estimated importance (from Table 6) were intercorrelated using Spearman’s rho, a correlation measure for rank-order data. Absolute values were taken of the regression coefficients before the analysis to account for their bi-directional nature. Results are shown in Table 7. The consistency between stated and estimated importance ratings was exceptionally low in Denmark (rho = .07), but reached
moderate levels in France, Sweden and the UK. Hence stated importance ratings should be used with the utmost care in the future as their validity appears somewhat doubtful.
Table 7. Consistency between stated and estimated importance of quality expectation dimensions for conventional pork (Spearman’s rho).

<table>
<thead>
<tr>
<th>Country</th>
<th>Stated</th>
<th>Est’d</th>
<th>Stated</th>
<th>Est’d</th>
<th>Stated</th>
<th>Est’d</th>
<th>Stated</th>
<th>Est’d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
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<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>.87</td>
<td>.41</td>
<td>.73</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>UK</td>
<td>.87</td>
<td>.30</td>
<td>.84</td>
<td>.12</td>
<td>.90</td>
<td>.35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Estimated importance of quality dimensions: outdoor pork

In a similar way, ratings of the expected quality of outdoor pork were collected from consumers, separately for each quality dimension. The questions were formulated as comparisons to conventional pork, asking consumers how likely they found it to be that outdoor pork would be fresher than conventional pork, healthier, and so on. The ratings were used in a multiple regression analysis with overall attitude towards outdoor pork as the criterion. As in the analysis for conventional pork, the standardised regression weights from the analysis can be interpreted as empirical estimates of the relative importance of the dimensions in the formation of consumers’ overall attitudes towards outdoor pork.

Again, the analysis was conducted separately for each country. In Denmark, Sweden and the UK, the overall amount of variance explained by all quality expectation dimensions together was moderate but highly significant, ranging from 17% to 21% (Denmark: unadjusted $R^2 = .21, F[12, 651] = 14.26, p < .001$; Sweden: unadjusted $R^2 = .17, F[12, 703] = 11.93, p < .001$; UK: unadjusted $R^2 = .17, F[12, 546] = 9.44, p < .001$). In France, where the dimensions healthiness and animal welfare had been omitted, the amount of variance explained in consumers’ overall attitudes was with 10% somewhat lower (unadjusted $R^2 = .10, F[10, 501] = 5.43, p < .001$). Standardised regression coefficients are shown in Table 8.

There was considerable variation across countries in terms of the expected quality advantages that determined respondents’ overall attitudes towards buying outdoor pork. In Denmark, expectations of better taste (as compared to conventional pork) were the strongest determinant of overall attitudes towards outdoor pork, highly significant with a medium effect size. Expected advantages in terms of freshness and healthiness had additional significant effects, although of a small size. In Sweden, expected advantages in terms of healthiness were the strongest predictor (at a medium effect size), followed by
expected advantages in terms of taste, animal welfare, and domestic origin (at smaller effect sizes). Low price had a small but significant negative effect: the more consumers were convinced that the price of outdoor pork would be low, the more negative were their overall attitudes towards buying it.

In the UK, expectations of better taste were the strongest determinant of people’s overall attitudes towards buying outdoor pork, followed by expectations of higher tenderness (both with a medium effect size) and healthiness.

Table 8. Estimated importance of quality expectation dimensions for overall attitude towards outdoor pork (standardised regression coefficients, estimated separately within countries).

<table>
<thead>
<tr>
<th>Country</th>
<th>Denmark</th>
<th>France</th>
<th>Sweden</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leanness</td>
<td>-.01</td>
<td>.05</td>
<td>-.07</td>
<td>-.04</td>
</tr>
<tr>
<td>Freshness</td>
<td>.16*</td>
<td>-.07</td>
<td>-.07</td>
<td>.02</td>
</tr>
<tr>
<td>Healthiness</td>
<td>.17*</td>
<td>n.a.</td>
<td>.22**</td>
<td>.18*</td>
</tr>
<tr>
<td>Tenderness</td>
<td>.02</td>
<td>.06</td>
<td>.00</td>
<td>.24**</td>
</tr>
<tr>
<td>Nutritional quality</td>
<td>.04</td>
<td>.10</td>
<td>-.11</td>
<td>-.05</td>
</tr>
<tr>
<td>Juiciness</td>
<td>-.14</td>
<td>.00</td>
<td>.08</td>
<td>-.17*</td>
</tr>
<tr>
<td>Domestic origin</td>
<td>-.05</td>
<td>.19***</td>
<td>.12*</td>
<td>-.02</td>
</tr>
<tr>
<td>Taste</td>
<td>.24***</td>
<td>.04</td>
<td>.18**</td>
<td>.29***</td>
</tr>
<tr>
<td>No hormone and drug residues</td>
<td>.02</td>
<td>-.02</td>
<td>-.04</td>
<td>-.08</td>
</tr>
<tr>
<td>Nearby production</td>
<td>.01</td>
<td>.05</td>
<td>-.03</td>
<td>.00</td>
</tr>
<tr>
<td>Animal welfare</td>
<td>.04</td>
<td>n.a.</td>
<td>.13*</td>
<td>.04</td>
</tr>
<tr>
<td>Low price</td>
<td>-.07</td>
<td>-.03</td>
<td>-.10**</td>
<td>-.06</td>
</tr>
</tbody>
</table>

\[ R^2 = .19 \quad R^2 = .08 \quad R^2 = .16 \quad R^2 = .16 \]

Note. *p < .05, **p < .01, ***p < .001. Squared multiple correlations are adjusted.

Interestingly, expectations of higher juiciness had a small but significant negative effect: UK consumers had more positive attitudes towards buying outdoor pork when they expected it to be less juicy than conventional pork. In France, where expectations of healthiness and animal welfare had been omitted from the survey, domestic origin was the only (but highly significant) predictor. Comparing the results of this analysis to those for conventional pork, it is somewhat disturbing that expectations regarding animal welfare, which had been the strongest predictors of consumer attitudes towards the buying of conventional pork, had no significant effects on attitudes towards the buying of outdoor pork. A closer look at the distribution of responses to this item reveals, however, that this is primarily due to lack of variation in consumer perceptions.
Expected quality advantage of outdoor over conventional pork

In the previous sections, the relative importance of the different dimensions of consumer quality expectations was analysed with respect to their role in the formation of consumers’ overall attitudes towards the buying of pork from pigs raised in different production systems. Table 9 shows the average values of consumers’ judgements as to whether it was likely that outdoor pork would have higher quality than conventional pork with respect to each quality dimension. Surprisingly, consumers expected outdoor pork to be better in terms of all quality dimensions, apart from price (all means significantly different from the neutral scale midpoint; \( p < .001 \)).

Table 9. Stated expectations of quality advantages of outdoor pork over conventional pork: mean ratings (scale ranging from \(-3 = \)”extremely unlikely”\) to \(3 = \)”extremely likely”\) with neutral point 0; standard deviations in parentheses).

<table>
<thead>
<tr>
<th></th>
<th>Country</th>
<th>Mean</th>
<th>(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leanness</td>
<td>Denmark</td>
<td>0.59</td>
<td>(1.18)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.82</td>
<td>(1.48)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>0.54</td>
<td>(1.08)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>0.68</td>
<td>(1.14)</td>
</tr>
<tr>
<td>Freshness</td>
<td>Denmark</td>
<td>0.69</td>
<td>(1.19)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.70</td>
<td>(1.51)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.02</td>
<td>(1.04)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>0.99</td>
<td>(1.10)</td>
</tr>
<tr>
<td>Healthiness</td>
<td>Denmark</td>
<td>1.10</td>
<td>(1.17)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.25</td>
<td>(1.12)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>1.40</td>
<td>(1.07)</td>
</tr>
<tr>
<td>Tenderness</td>
<td>Denmark</td>
<td>0.85</td>
<td>(1.13)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.83</td>
<td>(1.45)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>0.97</td>
<td>(1.05)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>1.05</td>
<td>(1.06)</td>
</tr>
<tr>
<td>Nutritional quality</td>
<td>Denmark</td>
<td>0.99</td>
<td>(1.16)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>1.23</td>
<td>(1.43)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.17</td>
<td>(1.12)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>1.22</td>
<td>(1.10)</td>
</tr>
<tr>
<td>Juiciness</td>
<td>Denmark</td>
<td>0.94</td>
<td>(1.13)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.81</td>
<td>(1.35)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.02</td>
<td>(1.07)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>0.92</td>
<td>(1.06)</td>
</tr>
<tr>
<td>Domestic origin</td>
<td>Denmark</td>
<td>1.17</td>
<td>(1.10)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.89</td>
<td>(1.27)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.26</td>
<td>(1.16)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>0.98</td>
<td>(1.11)</td>
</tr>
<tr>
<td>Taste</td>
<td>Denmark</td>
<td>1.21</td>
<td>(1.17)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.66</td>
<td>(1.35)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.25</td>
<td>(1.13)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>1.31</td>
<td>(1.11)</td>
</tr>
<tr>
<td>No hormone and drug residues</td>
<td>Denmark</td>
<td>1.16</td>
<td>(1.20)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.79</td>
<td>(1.23)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.17</td>
<td>(1.22)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>1.14</td>
<td>(1.22)</td>
</tr>
<tr>
<td>Nearby production</td>
<td>Denmark</td>
<td>0.15</td>
<td>(1.26)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>0.35</td>
<td>(1.36)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>0.58</td>
<td>(1.22)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>0.68</td>
<td>(1.17)</td>
</tr>
<tr>
<td>Animal welfare</td>
<td>Denmark</td>
<td>1.48</td>
<td>(1.09)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>1.58</td>
<td>(1.12)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>1.34</td>
<td>(1.18)</td>
</tr>
<tr>
<td>Low price</td>
<td>Denmark</td>
<td>-0.95</td>
<td>(1.22)</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>-0.81</td>
<td>(1.37)</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>-0.53</td>
<td>(1.13)</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>-0.69</td>
<td>(1.20)</td>
</tr>
</tbody>
</table>
Apparently, consumers do not only expect outdoor pork to have higher quality in terms of “soft” parameters such as animal welfare or nearby production, but also in terms of “hard” quality parameters and sensory profiles. These expectations were particularly pronounced with regard to the taste dimension. In Denmark, Sweden and the UK, the relative size of the effect on taste expectations was in excess of a full standard deviation, whilst in France, the relative size of the effect was still about half of a standard deviation.

Furthermore, the expectations were highly correlated across all dimensions of expected quality. In order to test for a “halo” effect, i.e. a generalized expectation of higher quality, factor analyses were conducted on the intercorrelation matrices of the quality expectation dimensions (including price) within each country. Scree plots of the Eigenvalues extracted from the correlation matrices are shown in Figure 5. In all four countries, the relative size of the first Eigenvalue as compared to all subsequent ones suggested a unidimensional structure.

Figure 5. Unidimensionality of consumer expectations regarding the higher quality of outdoor pork (Eigenvalues extracted from within-country correlation matrices computed from all quality expectation dimensions).
To test this suggestion, the intercorrelations were modelled as resulting from a common underlying factor, generalized quality expectation. The model was estimated by means of maximum likelihood factor analysis (using SPSS 11.5). The loadings of the different quality expectation dimensions on the generalized quality expectation factor are displayed in Table 10. The only variable with genuinely and consistently low factor loadings was, in all four countries, the expectation that outdoor pork would have a low price. This is not surprising since price is basically a choice criterion and not a quality dimension. Apart from this, it appears that all quality expectation dimensions did in fact emerge from a common, underlying factor, consistent with an interpretation in terms of a halo effect.

In the French data, the unidimensionality of the factor structure was somewhat less pronounced than in the other three countries. However, given that factor analytical models are notoriously sensitive to variations in the set of observed variables on which the modelling is based, this may have been a consequence of the fact that the consumer quality expectation dimensions “health” and “animal welfare” had been omitted in the French survey.

### Table 10. Loadings of consumer quality expectation dimensions on the generalized quality expectation factor related to the superiority of outdoor pork (standardised solution).

<table>
<thead>
<tr>
<th>Country</th>
<th>Denmark</th>
<th>France</th>
<th>Sweden</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leanness</td>
<td>.57</td>
<td>.44</td>
<td>.44</td>
<td>.54</td>
</tr>
<tr>
<td>Freshness</td>
<td>.80</td>
<td>.79</td>
<td>.85</td>
<td>.81</td>
</tr>
<tr>
<td>Healthiness</td>
<td>.88</td>
<td>n.a.</td>
<td>.90</td>
<td>.87</td>
</tr>
<tr>
<td>Tenderness</td>
<td>.87</td>
<td>.87</td>
<td>.83</td>
<td>.81</td>
</tr>
<tr>
<td>Nutritional quality</td>
<td>.89</td>
<td>.77</td>
<td>.90</td>
<td>.88</td>
</tr>
<tr>
<td>Juiciness</td>
<td>.91</td>
<td>.75</td>
<td>.87</td>
<td>.82</td>
</tr>
<tr>
<td>Domestic origin</td>
<td>.55</td>
<td>.60</td>
<td>.63</td>
<td>.61</td>
</tr>
<tr>
<td>Taste</td>
<td>.86</td>
<td>.28</td>
<td>.86</td>
<td>.83</td>
</tr>
<tr>
<td>No hormone and drug residues</td>
<td>.64</td>
<td>.32</td>
<td>.67</td>
<td>.73</td>
</tr>
<tr>
<td>Nearby production</td>
<td>.39</td>
<td>.25</td>
<td>.52</td>
<td>.65</td>
</tr>
<tr>
<td>Animal welfare</td>
<td>.62</td>
<td>n.a.</td>
<td>.64</td>
<td>.70</td>
</tr>
<tr>
<td>Low price</td>
<td>.20</td>
<td>-.20</td>
<td>.16</td>
<td>.01</td>
</tr>
</tbody>
</table>
Prediction of preferential buying intentions

In order to construct a model for the prediction of “preferential” buying intentions, difference scores were computed for those theory of planned behaviour variables (see above) that had been measured both for conventional and for outdoor pork, including attitude towards the behaviour (i.e., the difference score obtained by subtracting attitude towards the buying of conventional pork from attitude towards the buying of outdoor pork), subjective norm (the difference score obtained by subtracting perceived expectations of others regarding the buying of conventional pork from perceived expectations of others regarding the buying of outdoor pork), perceived behavioural control (the difference score obtained by subtracting perceived availability of conventional pork from perceived availability of outdoor pork), and behavioural intention the difference score obtained by subtracting intention to buy conventional pork from intention to buy outdoor pork).

An extended theory of planned behaviour model was then specified on the basis of these difference scores. Behavioural intention was defined as the dependent variable, attitude towards the behaviour, subjective norm, and perceived behavioural control as mediators, and the generalized quality expectation factor identified in the previous section as a latent exogenous factor. The parameters of the model were estimated separately but simultaneously within each of the four consumer populations, using the maximum likelihood estimator in LISREL 8.54. Standardised estimates are shown in Figure 6.

In all four countries, the generalized quality expectation factor had relatively high influences on consumers’ preferential attitudes towards the buying of outdoor pork as well as on their subjective preferential norms, but only negligible effects on perceived behavioural control. Preferential buying intentions were most strongly determined by preferential attitudes in Denmark and the UK. In France, on the other hand, subjective preferential norm was the strongest predictor, and in Sweden perceived behavioural control (i.e., the perceived relative availability of outdoor pork as compared to conventional pork). Overall, the model could explain 41% of the variation in preferential buying intentions in Denmark, 44% in France, 25% in Sweden, and 38% in the UK.

In Denmark, 32% of the respondents reported higher intentions to buy outdoor pork, whilst 39% reported higher intentions for conventional pork, and 29% were ambivalent. In France, the distribution was more skewed: no less than 46% reported higher intentions to buy outdoor pork, whilst only 12% reported higher intentions to buy conventional pork, and 42% were ambivalent. In Sweden, the distribution was similar to the one in Denmark: 29% reported higher intentions to buy outdoor pork, 32% reported higher intentions to buy conventional pork, and 39% were ambivalent. In the UK, finally, a distribution was observed similar to the one in France: no less than 43% reported higher intentions to buy outdoor pork, whilst only 15% reported higher intentions to buy conventional pork, and 42% were ambivalent.
However, preferential buying intentions should be interpreted with caution. For conventional pork, the analysis in the beginning of the results section had indicated that buying intentions were not predictive of actual behaviour. Hence, the validity of stated preferential intentions to buy outdoor pork should be discounted as well. Furthermore, the fit of the extended theory of planned behaviour model for the prediction of preferential buying intentions was far from satisfactory ($\chi^2 = 6640.39$, $df = 447$, $p < .001$; RMSEA = .16, NFI = .86, TLI = .86), suggesting that the theory of planned behaviour did not function properly for the kind of buying behaviour investigated here, given the use of single-item measures.

**Labelling preferences**

Finally, consumer had been asked in the survey what kind of information they would prefer to have on the labels of fresh pork products sold through retail channels. Table 11 shows the percentage of respondents who stated that the inclusion of certain types of information on product labels was “important”. Overall, it appears that consumers claimed to find virtually any kind of information important. Especially in Sweden and the UK, little differentiation can be seen in the data. Only in Denmark, and only with respect to one type of information (at which farm the animal was produced), less than 50% of the respondents stated that they found this particular piece of information important.
Table 11. Percentage respondents stating that inclusion of different kinds of information on the product label is “important”.

<table>
<thead>
<tr>
<th>Information</th>
<th>Denmark</th>
<th>France</th>
<th>Sweden</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality grading</td>
<td>82%</td>
<td>90%</td>
<td>92%</td>
<td>84%</td>
</tr>
<tr>
<td>Slaughtering date</td>
<td>90%</td>
<td>86%</td>
<td>87%</td>
<td>72%</td>
</tr>
<tr>
<td>Country of origin</td>
<td>78%</td>
<td>87%</td>
<td>88%</td>
<td>82%</td>
</tr>
<tr>
<td>Fat content</td>
<td>89%</td>
<td>74%</td>
<td>81%</td>
<td>77%</td>
</tr>
<tr>
<td>Production method</td>
<td>68%</td>
<td>90%</td>
<td>82%</td>
<td>82%</td>
</tr>
<tr>
<td>Animal feed</td>
<td>55%</td>
<td>92%</td>
<td>76%</td>
<td>81%</td>
</tr>
<tr>
<td>Transportation time to slaughterhouse</td>
<td>60%</td>
<td>58%</td>
<td>79%</td>
<td>78%</td>
</tr>
<tr>
<td>Age when animal was slaughtered</td>
<td>53%</td>
<td>64%</td>
<td>72%</td>
<td>63%</td>
</tr>
<tr>
<td>Particular farm</td>
<td>31%</td>
<td>52%</td>
<td>74%</td>
<td>66%</td>
</tr>
</tbody>
</table>

**DISCUSSION AND CONCLUSIONS**

The aims of the research presented here have been fourfold: to assess the general purchasing and consumption habits of pork consumers in Denmark, France, Sweden and the UK, to assess the way consumers make their purchase decisions for pork, to analyse the internal structure of consumer expectations regarding the quality of outdoor pork, their relative level as compared to expectations regarding conventional pork, and their potential influence on the buying process, and finally, to identify consumers’ preferences concerning the kinds of information that should be given on product labels.

The first key result was related to cross-national differences in consumption habits. In Denmark and Sweden, markets for fresh pork are dominated by consumers with very high consumption frequencies. In these countries, pork is still the prototypical type of meat in the national food culture. In France and the UK, on the other hand, pork is merely one type of meat among others that are consumed with similar, medium to low frequencies. Furthermore, Sweden was an exception in terms of the retail channels through which pork is sold to consumers. Whilst supermarkets were clearly the dominant channel in the other three countries, most Swedish consumers still bought fresh pork at the traditional butcher’s.

Concerning the second research question, the results were disappointing but helpful. Although purchase intentions could reasonably well be predicted, these intentions were not predictive of actual purchasing behaviour, at least not for conventional pork. Given
the tiny market shares that are currently commanded by organic and outdoor pork, a similar test was not possible for these meats. However, the observed lack of intention-behaviour consistency can also be interpreted as valuable information. If intentions play no major role, consumer purchases of conventional pork can be assumed to be largely determined by situational factors at the point of sale. These include the positioning of products in refrigerated counters and on shelves, the packaging of meat, quality labels, and price promotions featuring certain products.

By extension, it can be argued that there is little point in trying to influence consumers’ purchasing behaviour through communicative means that operate outside the supermarket. Hence, advertising budgets can be kept relatively low. Regarding outdoor pork, in particular, this conclusion is corroborated by the results observed in relation to quality expectations. Obviously, outdoor pork has a quality image that is already so high that it can hardly be regarded as realistic. In order to avoid the possibility of consumer disappointment after confrontation with actual products, the quality image should not be pushed to further extremes by additional communication efforts.

Related to this, the most striking result in the present research was observed in relation to consumers’ quality expectations. Respondents had been asked to state their quality expectations for pork from pigs raised in extensive outdoor production systems as well as conventional indoor production systems. When compared for pork produced under the two different systems, a “halo” effect was found in consumers’ quality expectations. Consumers gave substantially higher ratings to pork from outdoor production systems on all dimensions of expected quality, apart from price. The lack of coherence with price perceptions is not surprising since price is basically a choice criterion rather than a quality dimension. The result was consistent across the four countries.

Such “halo” effects in quality expectation may become a serious problem. When consumers associate outdoor production not only with health and animal welfare, but also with good taste, leanness, tenderness, and juiciness, this means that a process-related attribute like outdoor production is no longer a mere credence characteristic, but partly becomes an experience characteristic, where expectations can be confirmed or disconfirmed after the purchase. When consumers have unrealistic expectations about a better taste of outdoor pork, the disconfirmation of such expectations may reduce the likelihood that the product will be re-purchased. As shown in follow-up research by Scholderer et al. (2004), such contrast effects can be avoided when product qualities are achieved in outdoor and organic pork that come at least close to those of conventional pork.

Finally, it appears that consumer would prefer as much information as possible to be included on the label of fresh pork products. “Quality grading”, as it was referred to in the survey questionnaire, received the relatively highest rank among the different pieces of information consumers had been asked about. In light of the above result that influences at the point of sale (including the information on product labels) seem to be the major determinants of consumers’ conventional pork purchases, more effort can be recommended to producers and regulators to create credible and commonly accepted labelling systems for outdoor pork. As shown by Scholderer et al. (2004), consumers currently appear to confuse different systems such as free-range, organic, and indoor-
with-outdoor access. Clear distinctions, including certification and labelling systems, are clearly required here.
REFERENCES


