

# Ethical, moral and social dimensions in farm production practices: a segmentation study to assess Irish consumers' perceptions of meat quality

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## Abstract

*Growing consumer concerns with modern farming and food production systems indicate a significant market opportunity for meat production practices that consider ethical, moral and social value traits. In the current study, we aimed to identify and characterise distinct segments of Irish consumers based on their perceptions of the quality of meat from different farm-level production practices (organic farming, high animal welfare standards, free range farming, and "natural", treatment-free feeding regimes). An online survey was carried out with 251 Irish meat consumers. Using cluster analysis, we identified three distinct segments: "Target consumers", "Purist consumers" and "Disinterested consumers". Chi-square analyses revealed differences between the segments based on gender, age and meat-purchasing motivations. The results provide insight into the opportunities that exist for exploring new viable market segments as well as for engaging Irish consumers and empowering them with information around the ethical, social and moral aspects of farm-level practices related to meat production.*

## Keywords

consumer perception • credence attributes • meat quality • segmentation

## Introduction

Over the past decade, meat has held a heavily contested position in the diet as issues of health and safety, sustainability, authenticity and animal welfare have all been publicly scrutinised (Barnett *et al.*, 2016; Henchion *et al.*, 2017a, 2017b; Regan *et al.*, 2015). Consumer concerns about modern farming and food production systems indicate a significant market opportunity for products that consider ethical, moral and social dimensions (Henchion *et al.*, 2017a, 2017b). Credence attributes are attributes related to the product, used by the consumer to assess quality, but which cannot be verified by consumers themselves; rather, the consumer is reliant on other actors (e.g. regulators, industry) to verify the attribute (Bernues *et al.*, 2003a). Organic production, high animal welfare standards, sustainable production and natural feeding regimes have all been highlighted as important credence attributes as they reflect the growing consumer trend for ethically, morally and socially oriented food production (Bernues *et al.*, 2003b; Grunert *et al.*, 2004). There is growing awareness in the Irish market of the need to provide evidence of positive and responsible farm-level practices to retailers and their customers – e.g. Origin Green, spearheaded by Bord Bia (the Irish Food Board), is a quality assurance programme, which independently verifies the sustainability credentials of Irish farms. Generally, extrinsic cues provide consumers with information on the manner in which meat is

produced, for instance, through quality assurance schemes such as Origin Green, using labelling or other communicative means to transmit such information to consumers (Bernues *et al.*, 2003b; Grunert *et al.*, 2004). Along with quality assurance logos, labels such as "organic", "natural", "GM-free", "free range" and "grass-fed" are argued to be increasingly important in shaping consumer purchasing habits (National Research Council, 2010). These schemes, logos and labels can transform a credence attribute into a search attribute as consumers are empowered with information to assess a product prior to purchase (Verbeke *et al.*, 2013). However, the impact of such information on Irish consumers and their perceptions of meat quality are not well-defined.

When considering the ethical, moral and social dimensions in farm production practices as the basis of beef product attributes to support market differentiation, marketers need to assess the extent to which such attributes are valued in the market place. This may be assessed based on purchase behaviour, or in the absence of purchase behaviour data, on purchase intention. Purchase intention measurement provides stated preference data (as opposed to revealed preference data) for various product attributes. Such stated preferences are useful in this context as the products to be assessed are not currently clearly differentiated in the Irish market, and thus, data cannot be collected on revealed preferences. Stated preferences can be

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revealed by asking about purchase intention for competing product alternatives and applying a preference rating or ordering to such products. People purchase meat products based on a wide range of factors, not least of which is an assessment of the expected quality of the product (Verbeke *et al.*, 2010).

Adopting a user-centric framework, quality can be linked with consumer acceptability and is thus defined differently by each consumer based on their individual needs, preferences and goals (Bernues *et al.*, 2003b). There is evidence to suggest that at least some consumers are linking conceptually distinct process-related credence attributes with favourable meat quality through different pathways. For example, a recent study found that Mexican consumers were willing to pay more for welfare-friendly meat products, largely because they believed them to be of superior quality as a result of their health properties, as opposed to their concerns for animal welfare per se (De la Lama *et al.*, 2017). Some consumers believe organic meat is superior because they perceive it to be healthier, while others favour it for its environmental credentials (Napolitano *et al.*, 2009). Certain feeding practices (e.g. grass feeding) are linked with consumer perceptions of better meat quality as consumers may perceive greater food safety standards (Bernues *et al.*, 2003b) or they may anticipate more favourable sensory properties, for instance, better-tasting products (Realini *et al.*, 2013). Credence attributes such as these are increasingly important to consumers in shaping their perceptions of meat quality.

Previous research in other European countries has indicated that consumers can be segmented based on their beliefs about production practices and meat quality (Bernues *et al.*, 2003b). The clustering of ethical, moral and social priorities among consumers' meat quality assessments suggests the potential for shared determinants, which would support the meat sector to understand public demand for value-trait products and assist in tailored and strategic communication and engagement with consumers about these traits. Our aim in the current study was to carry out a cluster analysis to identify and characterise segments of Irish consumers based on their perceptions of the quality of meat produced through different farm-level production practices.

## Materials and methods

During winter 2014, 251 participants across the Republic of Ireland participated in a cross-sectional survey. The survey consisted of three sections: the first section covered general socio-demographic questions, the second section explored general food safety attitudes and behaviour and the third section explored beliefs and practices related to purchasing and consuming meat. The questionnaire was pretested

with meat production and meat science researchers, with advice and input also provided by a market research agency. Participants were recruited through an online market research agency, and a quota sampling procedure with quota control variables of age, gender, educational attainment and urban/rural split was used. Inclusion criteria included individuals above 18 years of age, resident in Ireland for a minimum of 3 years, consumers of meat and at least partially responsible for household shopping and cooking. The profile of the sample is found in Table 1. Participants self-administered the questionnaire through a Web-based platform, which took about 20 min to complete.

For the cluster variables, participants were asked about the relationship between meat quality and four different farm-level production practices: organic farming ("organically produced meat"), high animal welfare standards ("meat produced under a scheme guaranteeing humane animal treatment"), free range farming ("meat from free range animals, e.g. cattle on pasture/grass") and "natural" treatment-free feeding regimes ("meat from animals free from hormone/antibiotic treatment") (full wording in Table 2). Participants' agreement with each statement was rated on a scale of one (strongly disagree) to five (strongly agree). Demographic variables – age, gender and geographic residence – were used to profile our identified segments. Segments were also profiled based on six meat-purchasing motivation attributes and meat consumption patterns. Participants were asked to indicate their agreement to the following question "*Which of the following would you be prepared to pay more for if it guaranteed better...*" across six attributes: *tenderness, taste, freshness, wholesomeness, environmentally sustainable farming practices* and *meat produced with good animal welfare standards*. Consumption patterns were assessed according to frequency for eating beef, lamb, pork and chicken, with response options of Never (1), less than once a month (2), 1–3 times a week (3), once per week (4), 2–3 times per week (5), 4–6 times per week (6) and at least once a day (7).

## Statistical analysis

SPSS Version 18 was used to carry out statistical analysis. A cluster analysis was carried out to segment consumers based on their perception of the relationship between meat quality and four production practices: organic farming, high animal welfare standards, free range farming and "natural" treatment-free feeding regimes. The mean perception scores for these four production practices were used as the cluster variates in the cluster analysis. Cluster analysis requires the absence of substantial multicollinearity between the cluster variates. Providing evidence that our participants viewed the four production practices as conceptually distinct, the correlation matrix showed that correlations between the four cluster variates were sufficiently low ( $r < 0.7$ ) and the variance

**Table 1.** Profiles of the consumer segments

Profiling variables	Total sample	Target consumers	Purist consumers	Disinterested consumers
Gender, %				
Male	39.8	30	29	41
Female	60.2	36.4	38.4	25.2
Age, %				
30 years old or less	35.1	39.8	21.6	38.6
31–50 years old	39.8	32	35	33
51 years old or more	25.1	28.6	52.4	19
Geographic residence, %				
Rural/village	31.5	31.6	43	25.3
Small town	22.7	35.1	19.3	45.6
Suburban/city outskirts	21.5	35.2	37	27.8
Urban city/large town	24.3	34.4	36.1	29.5
Meat-purchasing motivations, %				
I am willing to pay more for tenderness	51.8	30	40.8	29.2
I am willing to pay more for taste	73.7	32.4	35.7	31.9
I am willing to pay more for freshness	57	35.7	36.4	28
I am willing to pay more for wholesomeness	22.3	33.9	44.6	21.4
I am willing to pay more for environmentally sustainable farming practices	31.5	41.8	38	20.3
I am willing to pay more for meat produced with good animal welfare standards	44.6	48.2	34.8	17
Frequency of meat consumption, M (SD) <sup>1</sup>				
Chicken	4.83 (0.86)	4.81 (0.91)	4.80 (0.68)	4.89 (0.97)
Beef	4.16 (0.79)	4.19 (0.68)	4.22 (0.74)	4.08 (0.94)
Lamb	2.63 (1.12)	2.67 (0.96)	2.66 (1.33)	2.57 (1.05)
Pork	3.80 (0.74)	3.79 (0.67)	3.86 (0.80)	3.75 (0.76)

<sup>1</sup>Scores: 1 = Never, 7 = At least once a day.  
M = mean value; SD = standard deviation.

**Table 2.** Mean values and standard deviations (within parentheses) for each meat production practice across the three identified consumer segments<sup>1</sup>

Production practices	Segment 1 Target consumers n = 85	Segment 2 Purist consumers n = 87	Segment 3 Disinterested consumers n = 79	Total n = 251
Organically produced meat is of high quality	4.32 (0.54)	3.41 (0.62)	3.33 (0.76)	3.69 (0.78)
Meat produced under a scheme guaranteeing humane animal treatment is of high quality	4.20 (0.55)	3.08 (0.61)	3.19 (0.86)	3.49 (0.85)
Meat from free range animals (e.g. cattle on pasture/grass) is of high quality	4.46 (0.50)	3.94 (0.51)	3.28 (0.78)	3.91 (0.77)
Meat from animals free from hormone/antibiotic treatment is of high quality	4.45 (0.52)	4.08 (0.38)	2.77 (0.62)	3.79 (0.88)

<sup>1</sup>Range of scores: 1 = strongly disagree and 5 = strongly agree.

inflation factor (VIF) scores, which quantify the severity of multicollinearity, were all less than the required value of 10 (range: 1.32–1.71). To determine the optimal number of segments, a hierarchical cluster analysis was first carried out using Ward's (1963) minimum variance method and selecting the squared Euclidean distance as the distance measure. Investigation of the agglomeration schedule and the magnitude change in heterogeneity as clusters were formed suggested that a three-cluster solution was optimal (Hair *et al.*, 2010). A visual inspection of the dendrogram (not shown here) confirmed this, and profiling of the three-cluster solution against the cluster variates also indicated that it offered the most distinct and conceptually meaningful clustering of participants. To fine-tune the analysis, a non-hierarchical K-means cluster analysis was then carried out with the initial cluster centres identified from the hierarchical cluster. Table 2 shows the mean values of each cluster variate by segment. A guideline of a z-score of  $\pm 0.5$  was used to identify the distinctive characteristics of each segment and to assist in the subjective task of describing and labelling the segments. Chi-square analysis and one-way analysis of variance (ANOVA) were carried out to investigate differences across the segments for a range of profiling variables, including gender, age, geographic residence, meat-purchasing motivations and frequency of meat consumption.

## Results

### Interpretation of the segments

Participants in Segment 1 ( $n = 85$ ) displayed the highest levels of agreement that all four production practices were linked with high quality meat: Organic production ( $z = 0.81$ ), high animal welfare standards ( $z = 0.84$ ), free range farming ( $z = 0.71$ ) and treatment-free animals ( $z = 0.75$ ). Based on these findings, this segment is the likeliest target market for value-trait products, thus this segment was labelled as "Target consumers".

As shown in Table 2, compared to the overall mean value of the sample, participants in Segment 2 ( $n = 87$ ) held below-average levels of agreement that good meat quality resulted from organic meat production ( $z = -0.36$ ) and high animal welfare standards ( $z = -0.48$ ). They displayed above-average levels of agreement that "natural" feeding regimes ( $z = 0.33$ ) led to high-quality meat. This segment was labelled "Purist consumers" to reflect the value they appeared to place in keeping farming practices traditional and with minimum change or intervention.

Participants in Segment 3 ( $n = 79$ ) held below-average values for all four production practices: organic meat production ( $z = -0.46$ ), high animal welfare standards ( $z = -0.35$ ), free range farming ( $z = -0.82$ ) and "natural" feeding regimes ( $z =$

$-1.16$ ). This segment was labelled "Disinterested consumers" as their assessment of meat quality was least influenced by the integration of ethical, moral and social dimensions in farm-level production practices.

### Profiling the segments

There was a significant association between gender and segment membership:  $\chi^2 (2, n = 251) = 7.06, P = 0.029$ . Males were more likely to be "Disinterested consumers". A significant association was also found between age and segment membership:  $\chi^2 (4, n = 251) = 16.18, P = 0.003$ . There was a clear trend with regard to "Purist consumers"; the majority of participants aged 51 years or more were in this segment, which valued traditional, natural production methods. Participants aged 30 years or less were less likely to be a member of this segment. No significant association was detected between geographic residence and segment membership ( $P = 0.100$ ).

A significant association was found between segment membership and willingness to pay more for environmentally sustainable practices when purchasing meat:  $\chi^2 (2, n = 251) = 7.11, P = 0.029$ . Of those willing to pay more for environmentally sustainable farming practices, most were "Target consumers" or "Purist consumers". A significant association was also found between segment membership and willingness to pay more for meat produced with good animal welfare standards:  $\chi^2 (2, n = 251) = 25.83, P < 0.001$ . Of those willing to pay more for meat produced with good animal welfare standards, almost half were "Target consumers" and only a minority were "Disinterested consumers". There was no significant association between segment membership and willingness to pay more for tenderness ( $P = 0.104$ ), taste ( $P = 0.714$ ), freshness ( $P = 0.389$ ) and wholesomeness ( $P = 0.112$ ). No significant differences were found between the segments for frequency of consumption of beef ( $P = 0.481$ ), lamb ( $P = 0.827$ ), pork ( $P = 0.599$ ) and chicken ( $P = 0.799$ ).

## Discussion

At a time when the meat sector is coming under increasing criticism for issues relating to sustainability and health, our findings provide considerable support for the importance given to credence attributes by consumers, which could help shape the future direction of the meat sector (Henchion *et al.*, 2017a, 2017b). Our findings reveal that a significant proportion of our participants place enormous importance on farm-level production practices for assessing meat quality. This could be down to communication trends in the last few decades, which mean that while consumers may not have firsthand experience of farm practices, they are increasingly exposed to information about how their food is produced and

supplied – from intense media coverage of incidents such as the horsemeat scandal, through to the universal sharing and discussion of information, images and videos via social media (Barnett *et al.*, 2016; Clarke *et al.*, 2016; Regan *et al.*, 2015; Vanhonachker & Verbeke, 2014). Consumers are becoming increasingly sensitive to how their food is produced and the impact that this has on meat quality. It is worth noting that far from being a niche group, the size of the “Target consumers” segment in our sample was comparable to the size of the other two segments. In the “Target consumers” segment, our study revealed a sizeable number of participants who felt that organic farming, free range farming, high animal welfare standards and natural feeding regimes were all important attributes for determining high meat quality. This segment is not obviously segregated by age or gender, indicating that this market spans a range of demographics.

A considerable number of participants in our sample perceived that a relationship existed between animal welfare and meat quality; consumers in the “Target Segment” (34% of the sample) perceived that the humane treatment of animals was linked to better meat quality, while consumers in both the “Target” and “Purist” segments (69% of the sample) perceived meat from animals that were free from hormone/antibiotic treatment to be of better quality. In the past, animal welfare issues were found *not* to be a major driving factor of Irish consumers’ meat-purchasing decisions (McCarthy *et al.*, 2003). In a 2015 Eurobarometer report, 80% of the Irish citizens surveyed indicated a strong belief in the importance of protecting the welfare of farmed animals, suggesting an increase in concern in recent years (Eurobarometer, 2015). Profiling the “Target consumers” in the current study, our findings show that not only do these consumers perceive better quality meat when assured of humane animal treatment, a sizeable number also reveal an intention to pay more for meat produced with good animal welfare standards. Thus, these consumers are not just supportive of animal welfare from a “concerned citizen” perspective; rather, they consider these dimensions as attractive product attributes that influence their assessments of meat quality and are likely to influence their purchasing decisions.

There is much discussion of a growing disconnect between consumers and how and where their food is produced (Barnett *et al.*, 2016). In the absence of direct experience or knowledge of contemporary agricultural practices, consumers generally tend to rely upon heuristics, simplifying strategies that allow them to quickly assess probabilities, formulate predictions and ultimately make decisions around food (Kahneman & Tversky, 1979). When consumers assess meat quality, one of the most commonly invoked heuristics is that of trust; for instance, consumers trust food regulatory authorities and agencies to act as responsible gatekeepers in ensuring the quality of their food (Regan *et al.*, 2015). Differential pricing of value-trait

meat products will be dependent on effectively and assuredly communicating to consumers about farming practices. Quality assurance (QA) schemes have played a significant role in this respect (Verbeke *et al.*, 2010). Currently in Ireland, the Origin Green scheme aimed at the business-to-business market has been well received and is proving successful in communicating sustainably produced Irish products to retailers beyond Ireland (Henchion *et al.*, 2017a, 2017b). In Ireland, the Bord Bia Quality Assurance logo found on meat products covers a range of standards related to animal health, welfare, traceability and environmental management, among others. Our findings suggest that there is a sizeable market of Irish consumers who would be well disposed to hearing specifically about farm-level practices and initiatives related to organic farming, the humane treatment of animals, free range farming and meat produced free from hormones and antibiotics given that they link these attributes to perceptions of better meat quality. It is argued that an array of diverse factors increasingly influence consumer perceptions of meat “quality” (Henchion *et al.*, 2017a, 2017b). As also evidenced by the current study, traditional attributes such as health, safety and sensory perception are increasingly contending with social, ethical and moral attributes. The consumer’s definition of “quality” is constantly being re-evaluated and redefined. This has important implications for QA schemes and highlights the need for continuous development of these schemes to align with consumers’ needs and values. Furthermore, as new attributes become increasingly prioritised by the consumer, it may become apparent that new forms of engagement and communication will be needed. For example, for issues related to animal welfare, public engagement mechanisms (including social media engagement) that engage and empower the consumer and that reconnect consumers directly with primary producers are likely to be important. Ultimately, our study reinforces the need to ensure that consumers’ conceptualisations of “quality” are prioritised not just by regulatory agencies but also by marketers and primary producers to ensure future market development of the meat sector.

## Acknowledgements

The questionnaire used in this survey was designed by the following international consortium to collect information on consumer attitudes in five countries and analyse the differences between them: Peter Purslow, Rosana Cepeda, Estefanía Cáffaro, Lorena Garitta and Miriam Sosa (Argentina); Renata Nassu (Brazil); Damian Frank (Australia); Liza Duizer, Tanya Ngapo and Heather Bruce (Canada); and Maeve Henchion (Ireland). Please see Purslow *et al.* (2017) for further information.



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