Meat Consumption: Trends and Quality Matters

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Abstract

The purpose of this paper is to use quality theory to identify opportunities for the meat sector that are consistent with current and future trends in meat consumption. Meat consumption has increased in the past and is likely to continue into the future. Growth is largely driven by white meats, with poultry in particular of increasing importance globally. The influence of factors such as income and price is likely decline over time due to slowing income growth rates and saturation in consumption rates in some markets so that other factors, such as quality, will become more important. Quality is a complex attribute and consumers’ quality expectations may not align with experienced quality due to misconception of certain intrinsic cues which undermines their confidence, increases uncertainty and can result in dissatisfaction. The establishment of relevant and effective cues, based on extrinsic and credence attributes, could offer advantage on the marketplace. The use of extrinsic cues can help convey quality characteristics for eating quality, but also for more abstract attributes that reflect individual consumer concerns e.g. health/nutrition, and collective concerns, e.g.
sustainability. However, it is important to recognise that attributes are not of equal value to all consumers and therefore, the marketing of differentiated products to different consumer segments is the reasonable way to go.

Keywords: meat consumption, sustainability, credence attributes, meat quality
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1. Introduction

This paper explores trends in meat consumption globally and examines the influence of consumers’ perceptions of quality on meat consumption, with a particular focus on credence quality attributes. It draws on secondary data to examine consumption trends, and uses the theoretical and empirical contributions on quality theory from the literature to identify quality aspects that are likely to be of increasing importance to the meat industry in the future. Ultimately, this paper aims to help the meat sector identify areas of focus to ensure consumer confidence in the quality of meat and meat products is maintained and enhanced in light of current and projected consumption patterns.

2. Global Trends in Overall Meat Consumption

Food balance sheets offer a blunt but, nonetheless, useful indicator of food consumption trends. While likely to overestimate per capita consumption of meats, these data have been widely used to guide agricultural and food policy due to the availability of data on a global basis, across a wide range of food commodities, over a significant time period. From analysis of the Food and Agricultural Organisation of the United Nations (FAO) Food Balance Sheet data, it is clear that there has been a significant increase in global meat consumption over time (see Table 1). Aggregate meat consumption increased by almost 60% between 1990 and 2009, from 175,665 thousand tonnes to 278,863 thousand tonnes, driven in part by a growing world population (Delgado, 2003). However, per capita consumption also increased by
almost 25% from 33.7 to 41.9 kg per capita (see Table 2). This indicates that factors in addition to population growth are influencing demand.

Most noteworthy of these factors is rising incomes in developing countries (Cranfield, Hertel, Eales and Preckel, 1998; Meade and Rosen, 2013). Delgado (2003) found that the amount of meat consumed in developing countries grew three times as much as it did in developed countries between the early 1970s to mid-1990s, reflecting differential rates of income growth. Declining prices (in real terms) (Palmer, 2011), trade liberalisation, globalisation of food systems and urbanisation (Delgado, 2003) have been identified as other influential factors.

The terms “nutrition transition” describes the major transitions in population-level dietary patterns associated with economic development. These transitions are driven by a range of culturally specific factors including the complex effects of urbanisation (Hawkesworth et al, 2010). Amongst other changes, the transition to pattern 4 in most low and middle-income countries is associated with a trend towards increased consumption of fat, sugar, processed food and animal proteins. This transformation in dietary patterns, and related changes in disease patterns, is highlighted in nutrition and public health literature and is coming increasingly to the fore with global policy makers (e.g. WHO, 2008).

Notwithstanding an upward trend in aggregate per-capita meat consumption, differences are evident when examined by meat category. The overall trend was upward for white meats and downwards for red meats. Between 1990 and 2009, bovine meat consumption per capita decreased by approximately 8% while pigmeat consumption increased by approximately 20% and poultry by 75% (sheep and goatmeat consumption increased by 11.8% equivalent however to only 0.2 kg/capita) (see Table 2). The relative price of different types of meat
explains some of this variation (Palmer, 2011), with the real price of beef being higher than poultry and pigmeat in most countries\textsuperscript{ii}.

2.1 Future Meat Consumption

Against a backdrop of a generally favourable global economic situation, and growing world population, the future for meat consumption overall is likely to be positive. Indeed world meat consumption growth is expected to be second only to vegetable oil in terms of growth rates of the major agricultural commodities (1.7% per annum for meat vs. 2% for vegetable oil by 2021 (OECD FAO, 2013)). On a geographic basis, most growth is expected from Asia, Latin America and the Middle East, and from developing countries in line. According to Rosegrant, Paiser, Meijer and Witcover (2001) diet upgrades, made possible by income growth, are expected to double the quantity of meat demanded by consumers in developing countries by the year 2020 (using 1997 as the base year). In contrast, a contraction in consumption is expected in some developed countries as a result of lower rates of income growth and declining populations (European Commission, 2012). Furthermore, meat consumption per capita appears saturated in these countries (OECD-FAO, 2013) and aging populations, changing demographics as well as increased health and dietary awareness is likely to result in a pattern of slowing consumption growth.

However, a standard pattern is not evident for all meat types. Figures 1 and 2 present projected changes in meat consumption from 2013 to 2022 based on OECD data for the world and Europe, respectively. Figure 1 shows while quantity consumed for all meats is projected to continue to increase, all meats, except poultry are expected to account for a declining share of total meat consumption. Furthermore, sheepmeat’s share is projected to decline at a faster rate than pigmeat, which in turn is projected to decline at a faster rate than
beef. The further domination of poultry meat is quite evident when the size of the current share of consumption (as depicted by the size of the bubble in Figure 1) is considered. Thus while growth in aggregate meat consumption is projected to be driven for the most part by increases in poultry and pigmeat, poultry is expected to overtake pigmeat as the most consumed meat in the world by 2022 (European Commission, 2012).

Figure 2 shows a slightly different pattern for Europe. Consumption per capita is projected to increase for all meats, except sheepmeat. However beef and lamb are projected to account for a declining share of total meat consumption. Poultry is projected to continue to account for an increased share of consumption, pigmeat is projected to be largely unchanged but beef, and particularly sheepmeat, is projected to account for a declining share of consumption. Thus, while white meat is projected to substitute for red meat in Europe as well as globally, pigmeat is projected to be a more significant component of white meat in Europe than in the global situation.

Amongst the countries that will drive increased consumption, price is expected to be a big factor. For example, price is expected to be a factor in China and elsewhere in Asia as price elasticity becomes a more influential factor than income elasticity, resulting in poultry being favoured, followed by pigmeat and beef. (Income elasticity is more influential when incomes are lower, i.e. as incomes rise changes in incomes have less of an impact (OECD-FAO, 2013)). Price will also be influential in more developed markets, e.g. the EU where “firm” meat prices, are expected to continue to slow the demand for meat overall, despite an improved economic context (European Commission, 2012).

Growth in meat consumption in developing countries is likely to continue in response to growing populations and increased incomes. For the meat industry, there will, however, be a challenge in maintaining market share in developed countries and the challenge will be more
pronounced for those selling red meats rather than white meats. Consumers in developed countries, with already high levels of per capita consumption, and aging populations are not expected to significantly increase their intake of animal proteins. Furthermore, consumers in developed countries are becoming more interested in meat production systems, animal welfare, food safety and other quality-related matters (OECD, 2013). These issues, which are related to pattern 5 of the nutrition transition (behaviour change), are likely to have an increased effect on their meat consumption patterns in the future. It will be essential for the meat industry to fully understand how consumers perceive quality and how such perceptions influence their choices, and to determine the most important quality attributes they need to maintain and enhance in existing and new meat products (Troy and Kerry, 2010).

3. Perceived quality as an explanation of consumer choices

Trends in meat consumption suggest that the influence of factors such as income and price will decline over time and that saturation in meat consumption may have been reached in many markets. Thus other factors, such as quality, will become more significant in influencing consumer choice. While and many and varied definitions of quality are evident in the literature, ranging from degrees of excellence through to fitness to purpose, when examining quality from a consumer perspective, one has to be concerned with perceptions and one has to be concerned with the emotional and functional dimensions of quality. In this section, the concept of quality from a consumer perspective is dissected and the process by which consumers form quality expectations and evaluate perceived quality is elaborated.

Consumers in all markets demand enjoyable, safe and healthy food products that are of high quality (Trienekens, Wognum, Beulens and van der Vorst, 2012; Verbeke, Pérez-Cueto, and Barcellos, 2010). However quality from a consumer’s perspective is subjective and thus
assessments of meat quality can vary across individuals, societies and cultures. Therefore, not surprisingly, exploring quality is complex due its broad and all-encompassing concept character. Luning, Marcelis and Jongen, (2002), for example, suggest that quality represents the features/properties of a product that result in satisfying consumer physiological and/or psychological needs. In making judgements about quality consumers form quality expectations based on their (unique) past experiences and the information presented in the purchase location (Steenkamp, 1990). As evident from Luning et al.’s definition, consumer’s motives (needs) guide what is sought from a product and influence how different stimuli in the environment are perceived (Grunert, Bredahl and Brunso, 2004) with, for example, some being perceived as more relevant than others. Ironically, a number of incongruities have been observed in consumer use of and interpretation of quality information. Particularly noteworthy is that: 1) quality inferences made by consumers may not be good indicators of actual quality and; 2) expressed demand for certain information may not translate into use of this information (Grunert, 2006). This confounds efforts of marketers as, due to the misuse of information, quality expectations may not align with experienced quality. There is increased complexity in that quality expectations formed by one consumer in a given situation may be very different to another consumer. These observations draw attention to three basic types of quality attributes discussed in consumer literature; search, experience and credence.

**Search attributes**

Search attributes, often referred to as “quality cues”, are normally used at point-of-purchase to evaluate choice alternative (Steenkamp, 1990). Point-of-purchase information represents a significant communication opportunity, where salient quality cues can be leveraged to support positive inferences regarding quality. These quality cues can be drawn from two
types, intrinsic and extrinsic. Intrinsic cues, described as inherent visible characteristics of
the product, are significant in determining quality expectation in many fresh food categories.
(Extrinsic cues represent information related to the product but that is not physically part of
the product (Steenkamp, 1990), that can be modified externally). Indeed evidence suggests
that at least two characteristics of appearance are normally used by consumers (Ngapo et al.
2004 in Dransfield, 2005) in making quality judgments on meat. This is particularly the case
for beef where cut type, colour, fat structure/type (marbling/rim fat) and fat levels (Grunert et
al. 2004) have been observed as influential in shaping quality expectations. However,
research evidence indicates that the use of some intrinsic cues to infer quality may be
dysfunctional with Grunert et al. (2004) illustrating that as little as 24% of experience eating
quality for pork could be explained by expected quality. Bello Acebron and Calvo Dopico
(2000) however argue that expected quality accounted for up to 63% of experienced quality
for beef.

These findings, among others, suggest a discord between expected and experienced quality
due to misconception of certain intrinsic cues. This undermines consumer’s confidence in the
sector, increases their uncertainty regarding quality expectations and can result in
dissatisfaction. Grunert (2006) argues that this misplaced reliance on intrinsic quality cues,
could be as a result of relatively few extrinsic cues available to support consumer evaluations.
This is supported by Bernués, Olaizola and Corcoran’s (2003) observation on the absence of
certain extrinsic cues that could support quality evaluations.

Commonly cited extrinsic cues for meat include: use by dates, quality labels (including
brands and quality assured symbols), place-of-purchase, packaging, price, and information
related to origin, animal feed, production and processing. Origin and place of purchase have
been noted as the two most significant extrinsic cues for meat (Grunert, 2006). Typically in
European markets, home produced (domestic) meat is believed to be of better quality than imports and independent butchers are believed by consumers to offer better quality meat than supermarkets (Becker, Benner and Glitsch, 2000; Bernües et al., 2003; Grunert, 2006). Indeed Verbeke and Roosen (2009) observed that region-of-origin-labelled meat has strong appeal for health orientated consumers. Animal feed has also been noted as important in inferring safety/health quality (Henson and Northen 2000; Bernües et al., 2003). Price, referred to by some as an extrinsic cue (e.g. Bello Acebron and Calvo Dopico, 2000) and others as a cost cue (e.g. Grunert et al. 2004), represents an indicator of quality and also the exchange/trade-off made for perceived quality. For some, price is the main determinant of choice, for example, Realini et al. (2014) identified a price oriented segment among Spanish beef consumers. However, it is noted that many consumers routinely buy products without knowing price and it appears that as a person gains more experience within the product category this cue plays a lessor role, with deliberations on price in repeated situations substituted with habitual behaviours (Grunert, 2005). Cues such as a brands and label images can help convey quality characteristics for more abstract affective benefits such as feelings of luxury and self-fulfilment. Through buying local produce, for example, a person may feel they are contributing to the well-being of the community and thus gain a sense of belonging. Equally a brand may infer indulgence or connection (Grunert, 2006).

Extrinsic cues offer considerable potential in supporting consumer quality evaluations in light of evolving purchasing motives linked to changing demographics, lifestyles and knowledge, and rising concerns on safety, health, and ethical factors (Bernües et al., 2003; Grunert, 2006). Furthermore, Verbeke et al. (2010) suggest that there is an appetite for an eating quality guarantee as a means of addressing failings in current quality evaluations.
The establishment of relevant cues that support effective quality evaluations could offer advantage on the marketplace. However, a significant challenge when communicating on a new quality attribute is garnering consumer attention to its existence and value. Even in the case of existing relevant cues, exposure to and use of cues are affected by the situation specific features relating to the location and the individual (Grunert et al., 2004). Consumers select cues to infer quality based on the predictive validity of the cue and perceived familiarity and ability to make quality inferences from the cue (Dick, Chakravarti and Biehal, 1990; Grunert, 2006). These points present a strong argument for the creation of overarching cues that support quality evaluations across a gamut of purchase motives – i.e. creating cues that display strong predictive validity. This also speaks to the observation made by Hocquette et al. (2012) that designation of origin and geographical indication could bestow specific quality characteristics on foods based on production/processing approaches taken within a natural, regional environment. These could span a range of purchase motives. Furthermore, extrinsic cues, such as label information can add a positive halo to a food. In this case the label, for example, that communicates a health benefit or production approach may also be more positively evaluated on experience quality (Wansink, van Ittersum and Painter, 2004). However, as always, it is the translation of these cues into quality expectations that will determine choice.

**Experience Attributes**

This brings us to consider the two other elements of consumer quality: experience and credence quality. These benefit-generating product elements cannot be assessed prior to consumption (Oude Ophuis and Van Trijp, 1995). Steenkamp, (1990) defines experience quality as the aspect of product quality that can be experienced/detected during consumption. The most significant of these for meat is eating quality which is normally evaluated based on
quality attributes such as taste, tenderness and juiciness. Expectations are either affirmed or refuted upon experience (Bello Acebron and Calvo Dopico, 2000) and are expressed based on levels of consumer satisfaction. As mentioned earlier, historically in meat and beef categories, consumers rely considerably on intrinsic cues to make inference on experience eating quality with rather limited success evident in their evaluations. However modern consumers expect experience quality to match their expectation and as a result are becoming more open to the use of extrinsic cues to support such evaluations (Verbeke et al., 2010).

By also including all post-purchase pre-consumption consumer experiences with a product, we can identify the second significant dimension of experience quality as convenience. This is affirmed or refuted based on factors such as time and effort necessary to transform the product into a meal. Given changing lifestyles convenience, as a quality attribute, is gaining in importance for certain consumer segments. However, convenience attributes can be associated with higher levels of processing which many view as less natural and less healthy. This may therefore result in an internal negotiation where the individual trades-off perceived health for convenience.

Credence Attributes

Credence quality refers to those product dimensions that cannot be assessed even on consumption. For health and process benefits (that may satisfy moral and ethical needs) a consumer cannot with any degree of certainty assess/confirm their existence. Figure 3 draws attention to generic categories of expected quality associated with meat. Moving from experience through to credence is associated with a shift from personal ability to assess quality at point-of-consumption to trusting others that purchase motives have truly been fulfilled. Verbeke et al. (2010) illustrate that while credence attributes such as safety were generally assessed using extrinsic cues, such as use-by-date and independently certified
quality labels and brands, healthiness quality evaluations involved an amalgam of intrinsic and extrinsic uses. Importantly they note the significance of confidence and trust in the use of extrinsic cues and draw attention to the value placed on independent institutions’ certification.

The discussion above clearly highlights an interface between the supplier and consumer where the supplier seeks to convey significant product characteristics that will align to consumer values and motives (Figure 4). As is evident from this discussion perceived quality has been conceptualised as multidimensional, and in the case of meats these are associated with sensory (eating enjoyment), safety, healthiness and convenience (Grunert, 2006; Grunert et al., 2004; Steenkamp et al., 1990). In addition to these there is an increasing emphasis on process characteristics like organic production, animal welfare and environmental sustainability based on moral and ethical motivations. When purchasing consumers draw inferences based on the information available. It is this information that represents the interface between both groups and where consumer self-knowledge and product-knowledge combine to guide choice.

From a supply chain vantage point Hocquette et al. (2012) considered how to construct four quality indices for the purposes of assessing overall meat quality across four of the key quality dimensions: sensory, nutritional/healthiness, safety and convenience. The development of such indices offers opportunities for communication with customers through the use of extrinsic cues which according to Grunert (2006) have considerable potential to sway how consumer perceive meat quality. This suggestion is made based on the premise that consumers want more of this type of information; that the backdrop story for products is becoming increasingly important (making a connection with place, time, environment and
people) and the halo effect of process quality can enhance the overall evaluation of the food (Grunert, 2006).


In seeking to leverage the wide range of quality attributes that influence consumer choice, or create new quality attributes, the influence of external forces on the process by which consumers form quality expectations needs to be understood. Historical, social and cultural factors need to be taken into account when considering how quality attributes, as delivered by supplier, are translated into a bundle of need satisfying benefits by consumers. York and Gossard (2004) observed that meat consumption patterns differ across cultures and Kanerva (2013) further illustrated these cultural differences in the varying significance of demographic factors such as age, gender, employment status, and education on demand for meat across European countries. These observations strongly support the concept that quality attributes may hold different meanings across cultures and it cannot be assumed that consumers will uniformly translate meat quality attributes into bundles of benefits. Indeed, as inferred from earlier discussion, market segmentation is a necessary requirement to ensure that meaningful links can be created between products and consumers thus taking account of consumers lived experiences and positioning of products within their food lives. A range of market opportunities exist for meat, ranging from differentiation based on experience attributes (sensory and/or convenience) and/or credence attributes. The potential market positioning approaches are many and varied, (indeed the emergence of breed as an extrinsic cue to convey higher eating quality is just one example of this), and the implications for stages within the supply chain need to be considered.
Future market opportunities are likely to be based in extrinsic (beyond origin and place of purchase) and credence attributes (Verbeke et al. 2010). Extrinsic cues will most likely play a greater role in forming expectations of experience quality, due to the aforementioned shortcoming of intrinsic cues. Furthermore with an increasing consumer emphasis on health and the environment it is likely that meat products that can credibly deliver these credence attributes will meet with some market favour. Credibility of product offering places particular demands on the production system. Indeed Meat and Livestock Australia (MLA) (2005, cited in Pethick, Ball, Banks and Hocquette, 2011, p13) emphasise the importance of the production system in meeting consumer needs in the red meat category. They argue that such production systems “must be ethical from an animal welfare and environmental aspect (ethical), [ensure] the products are safe and there is integrity within supply chains to justify claims relating to quality and health-promoting features (food safety and traceability)” and “that production systems throughout the supply chain should be efficient from a cost of production perspective such that consumers perceive the product as ‘good value for money’ – i.e. quality and price are perceived to match”. The potential of using aspects of the production system as an extrinsic cue to deliver on credence quality is illustrated by Grunert et al. (2011) who found that information about beef production (pasture-reared animals) was a major contributor for acceptance in comparison with other credence attributes studied.

When considering the future for meat, sensory aspects cannot be ignored as consistent eating quality represent one of the most important determinants of choice (Miller, Carr, Ramsey, Crockett and Hoover, 2001). Due to the dysfunctional link between some intrinsic cues and quality there is potential to use extrinsic cues to infer eating quality. To this end some supply chain systems have been developed that identify and control production and processing factors that affect palatability, for example, the PACCP system is designed to accurately predict the quality of the final product (Polkinghorne et al., 1999; Tatum, Belk, George and
Quality labels associated with these systems have the potential ability to replace traditionally used intrinsic cues and better align consumer expectations and experiences. The PACCP system also leaves scope for the improvement of meat quality rather than prevention of poor meat quality alone. Further development of this system, for example through linking with modelling approaches based on muscle biochemistry, is identified as a potentially fruitful area of research for improving the prediction of beef quality (Hocquette et al., 2014). Furthermore, advances in understanding of the molecular or biological components of meat quality, through genomics, proteomics etc., is also expected to be beneficial in terms of defining and optimising quality management systems and providing quality assurance (Mullen, Stapleton, Corcoran, Hamill and White, 2006). Such developments may lead to an increased production of premium quality meat which could be consistently labelled as such.

In principle, credence attributes related to sustainability may offer another opportunity in the medium to long term. The increasing recognition of the impact of food choices, eating habits and food consumption patterns on climate change, biodiversity, and the use of natural resources (Steinfeld et al., 2006; Dagevos and Voordouw, 2013) is putting pressure on policy makers, amongst other, to seek to influence consumer behaviour and achieve more sustainable consumption. Indeed the FAO deliberately entitled their report “Livestock’s long shadow, environmental issues and options” to help raise the attention of “the general public to the very substantial contribution of animal agriculture to climate change and air pollution, to land, soil and water degradation and to the reduction of biodiversity” with a view to not simply laying blame but to “encourage decisive measures at the technical and political levels for mitigating such damage” (Steinfeld et al., 2006, p.iii). Meat, and particularly beef due to enteric fermentation in the rumen, is recognised to have a significant impact in terms of
greenhouse gas emission. Indeed meat products have been described as “the most energy-intensive and ecologically burdensome foods” (Dagevos and Voordouw, 2013, p61).

Consumer concerns relating to environmental sustainability tend to be collective rather than individual (this is in contrast to concerns relating to safety, health and organoleptic properties which tend to be individual) (Dranfield, 2005). Thus it is not yet clear whether there is a strong direct market opportunity for industry in addressing consumers’ environmental concerns, i.e. environmental externalities associated with meat consumption could end up being paid for by the citizen rather than the consumer if government policies seek to reduce production (e.g. through compensation for producers) and/or consumption of meat (e.g. through publicly-funded campaigns to reduce consumption) to reduce the environmental impact of livestock production. Such policies could result in higher prices for red meat directly (e.g. through various taxes) or indirectly (through reduced supply). Thus, beef in particular may become an even more premium product. Sustainability credentials are, however, believed to be important from a supply chain perspective. The Origin Green programme promoted by Bord Bia, the Irish Food Board is leveraging this trend and is using sustainability credentials, which have been independently verified, to position Irish beef companies as the supplier of choice for key European retail accounts. Bord Bia has however not yet targeted consumers directly with Origin Green due to a perceived lack of willingness by consumers currently to pay for the benefits of such a programme.

Market opportunities and threats linked to health should be further explored as continually evolving research on the impact of diet on health is influencing food choice and behaviour as well as public policy (e.g. new regulations relation to labelling of nutritional content). MLA (2005) identified red meats as “health enhancing such that they are good sources of lean high-quality protein and nutrients (fatty acid species, minerals and vitamins) that are consistent with a healthy diet (human health attributes)”. However, while historically
intentional influences were generally designed to increase meat consumption more recently, certain governmental dietary guidelines are designed to decrease meat consumption (Kanerva, 2013), with many experts promoting a low-meat diet over a high-meat diet. This is likely to evolve further in developed countries in particular due to overconsumption of many nutrients, including protein (Westhoek et al., 2011). Furthermore, recent media attention suggesting a link between red meat consumption and certain illness, such as cancer and cardiovascular disease (Westhoek et al., 2011), is cause for concern by the industry even though these relationships are questioned by some researchers (see for example Sinatra, Teter, Bowden, Houston and Martinez-Gonzalez, 2014). While some early evidence suggests that negative publicity of the potential health risks of red meat did not decrease overall meat consumption (Schroeter and Foster, 2004) one can expect a negative impact from this in the longer term. Nonetheless, with any threat comes opportunity and the opportunity lies in developing healthier meat alternatives that do not compromise on taste. These developments may involve the application of novel production/process technologies, which may also have sustainability advantages. The potential for healthier alternatives was illustrated by Grunert et al. (2011) when they observed that meat products promoting a health benefit were more positively evaluated than produces without a health claim. Interestingly products with an explicit food safety benefit were evaluated more negatively in this research due to consumer scepticism. This draws attention to consumer risk benefit evaluations when considering new attributes and the technologies applied to create these.

Processing technologies (e.g. nanotechnology, thermal processing, high pressure processing) may augment key, or indeed create new, credence quality attributes and result in differentiated meat products for consumers. The technology itself, rather than the benefit conferred, can be a focal point in consumer quality evaluations. In some cases due to socially constructed and strongly embedded existing beliefs the technology is judged negatively,
indeed may be perceived as increasing health/safety risks, or resulting only in benefits for the industry rather than consumers, and as a result the augmented/differentiated product is rejected. Van Wezemael, Verbeke, Kugler, de Barcellos and Grunert (2010) illustrated with their observation that rejection likelihood increased for ‘safer beef’ with awareness of the technologies applied to achieve the augmentation. Greehy, McCarthy, Henchion, Dillon and McCarthy (2013) suggest that an array of influences intersect in consumer evaluative processes for technologies. Personal characteristics (including beliefs and values), relevance of benefits and perceived power/control are all significant. Lower trust and confidence results in increased concern however this is offset against the relevance and perceived necessity of benefits offered to a person’s everyday life. In other words high perceived benefits and relevance of a new product must be sufficient to offset any concerns about the technology. Credibility of information and trust in information sources are key issues (Verbeke, 2005; Gellynck, Verbeke and Vermeire, 2006) and this becomes critical to the acceptance of a new credence based attribute. This, again, bring us back to the challenge of consumers paying attention to and assimilating new information and the necessity for understanding the motives, attitudes and beliefs of various population segments. It is only through understanding consumers (i.e. consumer insight) that products and information can be designed and delivered in a meaningful manner to target groups. This should result in a true alignment of consumers’ motives and the bundle of benefits that is the supplier’s product.

5. Conclusions

Aggregate consumption of meat has been on a continuing upward trajectory, driven by population and income increases in particular. However the pattern for individual meat types has not been homogenous. Differences in relative prices have driven a trend whereby red meat has gradually been substituted by white meats. Furthermore, there is evidence that
growth rates in consumption are declining in response to slowing income growth rates and changing consumer preferences. Saturation levels are being reached in some markets in terms of per capita consumption and external factors such as climate change, obesity, technology advancements and changing consumer lifestyles are starting to influence policy initiatives and/or consumer behaviour. The meat industry needs to leverage all the tools at its disposal to ensure consumer satisfaction in an environmental sustainable manner. Lamb and beef at least cannot compete on price alone, due to the less intensive nature of production (Pethink et al., 2011). However there are new opportunities; ten years ago Grunert et al. (2004) concluded that there is ample room for the development of differentiated meat products and this should be consumer led. These opportunities still exist and indeed in the intervening years more opportunities have emerged.

Understanding the personal and context specific influences on consumer quality perceptions is important in ensuring the meat industry designs and develops products that fit with a range changing market needs and are produced to standards demanded by consumers and policy makers. It is through adopting a consumer-orientated approach and applying high standards of practice across the supply chain that a range of meats, offering imaginative combinations of experience and credence attributes, will be judged as fulfilling purchase motives. Within this context it is important to recognise that attributes are not of equal importance/value to all consumers and the bundle of benefits sought when purchasing meats varies across the population. Thus target marketing of differentiated products is an important step in the development of meaningful connection with customers.
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1 See Popkin (2002, revised 2006): Pattern 1: Palaeolithic man/hunter gathers; Pattern 2: Settlements begin/monoculture period/famine emerges; Pattern 3: Industrialisation/receding famine; Pattern 4: Non communicable disease; Pattern 5: Desired societal/behavioural change.
The real price for beef, pigmeat and poultry in 2009 was USD$2,700, $1,151 and $944 respectively (cwe or rtc). Source: OECD-FAO Agricultural Outlook 2011, retrieved 15/5/2014.


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<th>1990</th>
<th>2009</th>
<th>% change</th>
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<tr>
<td>Bovine Meat</td>
<td>54,065</td>
<td>63,835</td>
<td>18.1</td>
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<tr>
<td>Mutton and Goat Meat</td>
<td>9,100</td>
<td>12,763</td>
<td>40.2</td>
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<td>Pigmeat</td>
<td>68,692</td>
<td>105,503</td>
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<td>Poultry Meat</td>
<td>40,173</td>
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<td>Meat Other</td>
<td>3,634</td>
<td>6,098</td>
<td>67.8</td>
</tr>
<tr>
<td>Aggregate</td>
<td>175,665</td>
<td>278,863</td>
<td>58.7</td>
</tr>
</tbody>
</table>

Source: Authors’ analysis based on FAO (2014)

Table 2 Global Meat Consumption, 1990-2009, kg/capita

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2009</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bovine Meat</td>
<td>10.4</td>
<td>9.6</td>
<td>-7.7</td>
</tr>
<tr>
<td>Mutton and Goat Meat</td>
<td>1.7</td>
<td>1.9</td>
<td>11.8</td>
</tr>
<tr>
<td>Pigmeat</td>
<td>13.2</td>
<td>15.8</td>
<td>19.7</td>
</tr>
<tr>
<td>Poultry Meat</td>
<td>7.7</td>
<td>13.6</td>
<td>76.6</td>
</tr>
<tr>
<td>Meat Other</td>
<td>0.7</td>
<td>0.9</td>
<td>28.6</td>
</tr>
<tr>
<td>Aggregate</td>
<td>33.7</td>
<td>41.9</td>
<td>24.3</td>
</tr>
</tbody>
</table>

Source: Authors’ analysis based on FAO (2014)
Figure 1.Projected World Meat Consumption in 2022 Compared to 2013.

The size of the bubble represents the share on total meat consumption in 2022.

Source: Authors’ analysis based on OECD-FAO (2014)
Figure 2. Projected Meat Consumption in Europe in 2022 compared to 2013.

The size of the bubble represents the share on total meat consumption in 2022.

Source: Authors’ analysis based on OECD-FAO (2014).
Figure 3. Quality evaluation: the role of trust in others and confidence in self.
Figure 4. Search Attributes: The Supplier-Consumer Interface