

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON FRESH PRODUCE SUPPLY CHAIN MANAGEMENT

6 to 10 December 2006
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Expanding the quality concept to satisfy consumer demand

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Abstract

Personal disposable income has a significant impact on the food consumers purchase, where they buy it and where they consume it. With increasing income there is a corresponding increase in the desire for more convenience, a greater variety of food and higher quality food. Quality can be conceptualized at five levels. At its most basic level, quality captures the consumers' requirement for food that is nutritious, safe to eat and true to description. The intrinsic quality considers the physical attributes of the product. Extrinsic quality considers the value that the brand, the package, the place of purchase and the price add to the product. As attributes such as taste, texture and flavour can only be ascertained after purchase, such are described as the experiential quality attributes. The credence attributes are those that consider how the food was produced. With rising income, consumers want to know where the food was produced, what it contains and how it was produced. Concern for the environment, sustainable production and worker welfare and animal welfare are expected to become more influential in consumer decisions to purchase as they become more affluent.

Introduction

Personal disposable income has a significant impact on the food consumers purchase, where they buy it and where they consume it. With rising income comes a greater desire for more variety, more expensive and higher value foods in the diet (OECD–FAO, 2005). In general, as income increases, there is an increase in the consumption of meat, sugar, vegetable oils and dairy products and a parallel decrease in the consumption of roots and tubers, cereals and coarse grains. These changing consumption patterns tend to accelerate as the population becomes increasingly urbanized.

Rapid urbanization has also contributed to changes in lifestyles and food preferences (OECD–FAO, 2005). As their purchasing power has grown, city dwellers have increased their demand not only for more dietary diversity, but also for more convenient products that require less time to prepare and to consume. Hughes (1999) demonstrates how, since 1934, food preparation time in the home has declined from 2.5 hours to 15 minutes (in 1994), and by 2010, it is expected to decline to eight minutes. This implies substantial growth in the market for prepared and semiprepared food and increasing expenditure on food away from the home. In this respect, convenience is also associated with eating “on the run”; products that do not make a mess; and products that can be eaten in one hand (Martech, 2005). Parallel with the desire for greater convenience is an increase in more trendy sophisticated foods, as well as snacking, cafés and 24-hour food sales.

Food is sold either through retail stores or food service establishments. While over 40 percent of the total value of global food sales is currently made through the food service sector, sales through the food service sector are expected to overtake retail food sales in the immediate future (Gehlhar and Regmi, 2005). Furthermore, at the retail level, food can be broken down into two broad categories: fresh and processed. Packaged food already accounts for more than half of total food expenditure in the industrialized countries, but a third or less in the developing countries.

With increasing income and the desire for greater convenience, a greater quantity of food is purchased from supermarkets. Supermarkets are perceived to be cleaner and more hygienic, and the extended shopping hours provide greater opportunity for time-constrained consumers to purchase. Research indicates that most consumers visit a supermarket at least twice a week, with most shopping during the weekend (79 percent) (Glover, 1999). For those buying during the week, most shop between 16.00 and 21.30.

Product diversity is also increasing as producers, food manufacturers and retailers strive to meet the demands of increasingly sophisticated consumers (Martech, 2005). Products are being differentiated on the basis of what they contain and or what they do not contain (Centrec, 1999). Some attributes are based on the methods of production, the place of production, the way in which the product has been processed or handled, and the impact that either the production or processing of the product has had on the environment and society. With such an increasing array of products, supermarkets provide an opportunity for consumers to interact with the product with no obligation to buy (Irving, 1999).

While there is an implicit assumption that food is safe to eat, with the increasing reliance on convenience foods and greater consumption of food away from the home, the incidence of food poisoning is increasing, even in the world's most developed economies. Centralized food processing and mass catering provide greater opportunities for food to become contaminated from a wider range of pathogens (Kafenstein, 2003). More intensive animal production systems potentially encourage the spread of zoonotic micro-organisms. Moreover, the food safety problem is rapidly becoming a global problem because of the increasing international trade in food and animal feed. Tourism may also contribute to the increasing spread of food-borne disease, for people can acquire an infection in one part of the world and spread the causative agent in another.

Studies of food and culture indicate that the taste for raw food is based on the belief that such food is healthy and invigorating (Kafenstein, 2003). However, such food is not always safe to consume. With increasing affluence, the consumption of "blue" steak, sashimi and raw shellfish increase, thereby exposing consumers to considerable risk. Furthermore, consumers are demanding foods that are minimally processed, without the use of preservatives. The prolonged storage of such foods can result in the growth of pathogens, even at refrigeration temperatures, thus increasing the risk of disease. With more consumers relying upon processed food and with more meals being consumed away from the home, a lack of education in the basic rules for the hygienic preparation of food is a major factor contributing to the increasing incidence of food-borne disease in the home. Finally, as the population ages, a larger sector of the population has a lower resistance to disease and is therefore more vulnerable to food-borne illness.

Not only must the food be safe to eat, but as income increases, consumers expect their food to be produced and processed in a manner that is safe for the environment. While such issues as chemical residues, soil erosion and contamination of water resources predominate, in the world's most discerning markets, animal welfare, biodiversity, ecoefficiency, fair trade and social accountability are growing in importance (Baines, 2002; van Berkel, 2002).

It is also important to appreciate that as income increases, expenditure on food, as a proportion of the household budget, decreases (Gehlhar and Regmi, 2005). During the last decade, consumers in the high income countries spent an average of 13 percent of their total household income on food, whereas consumers in the low income countries spent an average of 43 percent. As there is a limit to how much food an individual can consume, with increasing disposable income, the demand for food is driven by an increasing desire for higher quality products. Hughes (1999) describes how leisure shoppers are purchasing for an important meal or social occasion and are much less concerned about price. The product taste and provenance of the food become much more important. Purchasing more exotic food from faraway places is part of the romance of leisure shopping.

Defining the quality concept in the fresh produce sector

Quality is the key concept in building customer value and satisfaction (Oude Ophuis and van Tripp, 1995). However, quality is a multifaceted concept which is defined in many different ways.

From the utilitarian perspective, Peri (2006) defines quality as fitness for consumption. Quality can thus be described as the requirements necessary to satisfy the needs and expectations of the consumer. To some, quality is considered synonymous with innate excellence which cannot be analysed, but only recognised through experience (Oude Ophuis and van Tripp, 1995). At the other extreme, quality refers to some measurable comparison to some predetermined or ideal standard. However, as quality means different things to different people, quality is best evaluated at an individual level. Aaker (1991) defines perceived quality as the customer's perception of the overall quality or superiority of the product with respect to its intended purpose, relative to the alternatives. Perceived quality is therefore, an intangible, overall feeling about the product, which is usually based on some underlying dimensions including such variables as product reliability and performance.

Even so, quality is a multifaceted concept, based on several dimensions that cannot all be evaluated by the consumer prior to purchase (Oude Ophuis and van Tripp, 1995). Consumers therefore must use surrogate or indirect indicators of quality to make a judgement of perceived product quality from an array of product-related attributes. These quality cues may be categorized as either intrinsic or extrinsic. Intrinsic cues are part of the physical product. Extrinsic cues, although related to the product, are not physically part of it. A further distinction is made between experience quality attributes and credence quality attributes. Experience attributes can be ascertained on the basis of actual experience whereas credence attributes cannot.

Intrinsic quality

Intrinsic quality attributes are closely related to the product and cannot be changed without also changing the physical characteristics of the product (Oude Ophuis and van Tripp, 1995). Appearance, colour, size and shape often serve as intrinsic quality indicators for fresh fruit. The Horticulture Research and Development Corporation identified freshness, firmness, colour, variety and size as the most important attributes that helped consumers select fruit (HRDC, 1990).

Extrinsic quality

Price is the most well known extrinsic indicator of quality (Oude Ophuis and van Tripp, 1995). When no other information is available and the consumer must judge the quality of two similar products, the higher-priced alternative is generally expected to deliver superior quality. However, there is also evidence to suggest that most consumers rate quality as being more important than price (Batt and Sadler, 1998).

For the majority of consumers, quality means recognizable brands (Glover, 1999). Much of the value of a brand is determined by the quality of the product that the brand purports to deliver to consumers (Aaker, 1996). While this is most often associated with the tangible product features, as consumer incomes increase, consumers' wants expand to incorporate a greater variety of both intangible and credence attributes. The product must not only look appealing, but it must also deliver the desired taste and it must have been produced in a manner that minimizes the impact on the environment.

For the majority of horticultural products, branding means identifying the product with a label (Pay *et al.*, 1995). Bowbrick (1992) suggests that a label attached to products from a specific producer, distributor or retailer aims to convey information to or to persuade a potential customer about the quality, reliability, social status, value for money or safety of the product. Perceived quality, associations and a well-known name may not only provide reasons to purchase and affect use satisfaction, but may also have the potential to provide significant price premiums for producers (Aaker, 1991).

While the use of brands, particularly generic in-store brands, is rapidly increasing in the retail sector (Fearne and Hughes, 1999), branding fresh produce remains problematic. In Australia, most growers are labelling apples, irrespective of the quality, resulting in mixed grades and no guarantee of delivering premium quality (Batt and Sadler, 1999). However, other variables are involved. The product is perishable, thus irrespective of quality at the time of branding the product will deteriorate because of inappropriate post-harvest treatments or poor product handling. With each grower having his or her own perception of quality, fruit of vastly different quality standards will emerge on the retail shelf, so even if individual growers do differentiate between grades, quality differences will be lost at the retail level.

In what is rapidly becoming a global food market, the most widely used means of branding fresh produce is country of origin. Consumers differentiate between products from different countries on the basis of product-country images. These images, which may be based on actual product experience or information gathered through advertising and other sources of market information, provide consumers with a basis for evaluating perceived product quality (Verlegh *et al.*, 2005).

Country of origin is believed to influence consumer product evaluations most when the consumer's level of involvement in the purchase decision is low (Verlegh *et al.*, 2005). As the purchase of food is most often considered to be a routine, low involvement decision, consumers can be expected to place considerable importance on the country of origin. However, before producers seek to benefit from the country-of-origin effect, some consideration must be given towards the perception, favourable or unfavourable, that consumers may already hold. Not only is the country-of-origin effect product-specific, but it is to a large extent, uncontrollable. Negative publicity and unrelated low quality products from the same country of origin can seriously damage the brand or an unrelated product. Especially where attempts are made to differentiate the product in the market on the basis of some intangible or credence attribute, consumers may seriously question whether the country of origin has the capability to deliver what is promised.

Increasingly, consumers want to know that their food is safe, where it came from, how it was produced and who handled it (Martech, 2005). Proof of claims is becoming a key requirement, especially with regard to the health benefits and the various credence attributes such as how the product was produced (organic, hydroponic), the means by which it was processed (*halal*), the environmental quality (conservation, sustainability), or social equity (worker welfare, child labour, fair trade). Labelling is also required to provide nutritional information and to identify what components have been added to the food, including the presence of genetically modified organisms (GMOs).

The product packaging system must facilitate product recognition, marketing and use (Peri, 2006). The quality associated with packaging will include aesthetic requirements concerning its presentation and the information conveyed by the label. Ease of use has become a decisive factor, whether it concerns the transportation, conservation, preparation or use of the product.

Experiential quality

For food, taste is the most important experience attribute (Oude Ophuis and van Tripp, 1995). While the interaction of several intrinsic and extrinsic quality cues with taste and flavour has been documented, Batt and Sadler (1999) suggest that the physical attributes most often used by consumers to select fresh fruit from a retail store are poor indicators of eating quality.

In most instances, the consumer preference for fruit is derived from the interaction between taste, texture and flavour (Harker, 2001). Texture relates to the mechanical properties of the flesh, mouth-feel and juiciness. However, Codron *et al.* (2005) consider that appearance should also be considered as a sensory attribute, for there is anecdotal evidence to suggest that most "consumers eat with their eyes" (Hughes, 1999). Peri (2006) further expands on the sensory attributes to include memory, culture, values and emotions, for these bring together the consumer's knowledge or memory of food and the consumer's sensory reactions to it.

Credence quality

The credence attributes are desirable product benefits like nutritional value and wholesomeness that cannot be experienced directly (Oude Ophuis and van Tripp, 1995). To assess the credence attributes, consumers must rely on the judgement or information

of others that the product contains the desired attribute. Health is a typical credence quality attribute that is becoming more important as consumers' disposable income increases. While most consumers are aware of the link between eating and health, they do not expect the consumption of a product on a single occasion to have a health implication that they can experience (Codron *et al.*, 2005). Nevertheless, most consumers are aware of the adverse implications of regularly consuming foods high in fats, sugar and salt, and there is growing evidence of the consumers desire to avoid those foods containing preservatives, artificial colours and flavours (Batt *et al.*, 2006).

There is however an implicit assumption that the food that reaches the supermarket shelves is safe to eat (Codron *et al.*, 2005). Following an alarming increase in the incidence of food poisoning, most governments have responded by enacting a raft of legislation which requires retail buyers to take all reasonable steps to ensure that the food they sell is safe (Wilson, 1996). As a result, most major supermarkets now require fresh produce to come from suppliers who have an appropriate accredited quality management system. A genuine and visible quality management programme is a prerequisite for any fresh produce company which wishes to supply the supermarkets (Fearn and Hughes, 1999).

The increasing desire for safe food not only encourages consumers to purchase more familiar brands and prepackaged products (McCann-Hiltz, 2004), but for them to take a greater interest in the holistic characteristics of the food that they purchase (Batt *et al.*, 2006). Environmental values are becoming increasingly aligned with a greater suspicion of industrial food processes and the desire to support environmentally sustainable farming practices.

With regard to the environmental impacts, Martech (2005) differentiate between the "eco-impact" and the "eco-image". The eco-impact considers the contamination of soil and water resources with the consequent loss of fitness for both current and future uses. The eco-image is influenced by the consumer's value system and includes such issues as animal welfare and responsible consumption. This includes recycling, sustainable production practices, a perception that natural is better (non-GMO) and a sense that native flora and fauna need to be protected. Furthermore, the need to recognize and protect indigenous culture and values is increasing in importance.

In Australia, most consumers show little concern towards the possible presence of chemical residues because most consumers wash the fresh fruit and vegetables they have purchased prior to consumption (Batt and Giblett, 1999). However, there is also an implicit assumption that under the various quality management systems that most modern supermarkets operate, growers have adhered to the prescribed withholding periods and applied chemicals at the appropriate rates. Within many of the transitional economies, given the chemicals currently available, the growers' lack of knowledge and the high incidence of pests and disease, such assumptions are ill-founded. Anecdotal evidence from Kapatagan (a *barangay* on the slopes of Mount Apo in Southern Mindanao), suggests that farmers seldom eat the vegetables they have grown because of the high quantities of chemicals applied (Batt, 2004). Some consumers reportedly look for produce which has been eaten by insects on the grounds that these are indicators that the produce had not been sprayed excessively. However, freedom from chemical

residues is seldom an issue unless consumers are prompted. As a latent variable, freedom from chemical residues will only become an issue when visible residues are present on the produce, thus bringing it to the consumer's attention or when consumers demonstrate an express desire for organically grown produce.

It is also important to realize that food carries symbolic meanings and has psychological significance beyond its nutritional value (Sijtsema *et al.*, 2002). Not only do certain products have different meanings for different religions, but the amount and the time at which food is consumed can have meaning. Religious norms often specify what food may be consumed and which is forbidden.

Food preference constitutes one of the strongest single predictors of food choice and preference. Food ideology is a combination of attitudes, beliefs, customs and taboos affecting the diet of a given group (Fieldhouse, 1995). Food habits evolve from learned experience, which in turn leads to the development of attitudes. Food binds people to their faiths through powerful links between food and memory, which both solidifies group membership and sets groups apart. Personal ideology may also incorporate many political beliefs and concerns that individuals may possess (Pollard *et al.*, 2002).

Conclusions and implications

Consumers' assessments of fresh fruit and vegetable quality vary considerably according to country, sex, age, socioeconomic status and other factors (Shepherd, 2006). Nevertheless, criteria such as appearance, colour, uniformity, ripeness and freshness are invariably the major variables that influence the consumer's decision to purchase. While other quality criteria such as flavour, aroma and texture cannot be assessed prior to purchase, consumers base their purchase decisions on previous experience.

In some cases it may be possible to judge the internal quality from external appearance. By looking at fruit, for example, it may be possible to tell whether it is ripe or unripe and, therefore, whether it is sweet or sour. Where consumers are permitted to touch fruit, the intrinsic quality can be assessed by smell, the degree of hardness and even sound, but repeatedly touching the fruit can also have a negative impact on quality. However, it is rarely possible for consumers to identify that produce which may be unsafe when it is on retail display.

For those consumers who are concerned about food safety and can afford to do something about it, they may choose to purchase from supermarkets (Shepherd, 2006). Others may purposefully select preferred brands, preferred varieties or select produce on the basis of the country in which it was produced. While the majority of the consumer concern is directed towards the dangers arising from pesticide residues, most consumers are completely unaware of the potential threat of microbial and parasitic contamination. Most consumers erroneously believe that produce that is fresh, clean and packed is also safe to eat.

However, for the majority of low income consumers, price is the dominant factor in the decision to purchase. Despite the inherent risks, many consumers are unable to pay

more for safer produce and must buy whatever is available in the market. Furthermore, store location and convenience may be more important than quality (Shepherd, 2006). In such circumstances, consumers purchase fruits and vegetables at prices they can afford and, at those prices, make purchase decisions on the basis of intrinsic quality criteria. Food safety does not appear to play a vital role in the consumer's choice, except among the higher income groups.

Even among the higher income groups, while consumers may be interested in all four types of quality attributes, many believe them to be, at least partly, incompatible. For example, the high fat content in a dairy product may be regarded as an indicator of both superior taste and inferior health (Codron *et al.*, 2005). Organic products may be desired as a form of production but at the same time be perceived as being less healthy by some consumers because of the application of animal manures. Convenience products with a high degree of processing may be regarded as undesirable in terms of their industrial methods of production and yet without minimal processing, many fruits such as oranges, mangoes and pineapples present major problems for consumers. While fresh fruit and vegetables make for healthy living, many consumers believe more health-giving vitamins can be obtained in a tablet and that tomato sauce has more antioxidants than fresh tomatoes (Hughes, 1999).

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