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CHAPTER 5

Consumer perception of food quality and safety

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5.1 Introduction

Increased interest in the issue of food quality and safety is associated with increased demand as a reflection of changes in the content and meaning of food supply chains. In fact, it is a series of qualitative changes faced by the agri-food complex as a result of the need to establish competitive patterns of competition in the sector. Namely, as the final front of consumption, food consumers represent a key reference point that defines the concept of food quality, and which is very closely related to the perception of safety for the same. From the consumer's point of view, in fact, several aspects contribute to defining the quality of a food product: it is not only internal qualities such as taste and other organoleptic properties, but also external factors such as origin and labeling^[1]. Also, the quality and safety of food are the subject of public debate, ie a key factor that defines food policy and industry. Namely, all these aspects draw public attention to the issue of food safety and quality. It is not surprising that food quality safety assumes a prominent place in the political agenda, as well as in the sphere of consumer behavior. Taking all this into account, it could be said that the consumer is a pivotal component that in its maturation has become critical, demanding and picky when it comes to food. Therefore, the issue of quality and safety is the basis of differentiation policies, ie without such an approach it is impossible to imagine a modern competitive company that produces and offers food in a highly saturated and sensitive food market. Differentiation or the way of finding a whole range of prominent product features related to the designations of its origin or the way or technology of production that may suggest certain environmental or ethical aspects, creates a basic assumption of the concept of quality. Labeling or branding are the strongest tools that contribute to successful differentiation, and this is supported by research that confirms that consumers always check when buying whether a product has any labels that suggest quality and thus guarantee them certain characteristics^[2].

5.2 Consumer awareness of food quality and safety

There are many ways in which the concept of food quality is defined, and analogously its safety. It is a common opinion that quality has its objective and subjective dimension. The objective dimension of food quality refers to the physical characteristics built into the product and is of interest to primary producers, processors, food technologists and the like. Subjective quality is the quality perceived by consumers and

influenced by different product characteristics. The relationship between these two dimensions is the essence of the economic importance of food quality, ie this link is the starting point for food producers to optimally define the physical characteristics of products in accordance with consumer preferences. In other words, it is a way of adapting products and marketing strategies to the real needs and desires of market segments. In this sense, food quality is a parameter of market competitiveness for its producers.

The subjective dimension of food quality as a way of defining consumer preferences actually represents the forms of motives for buying and the values associated with them. Responding to individual product properties has significant consequences on consumer expectations, ie the values that consumers seek and expect have an impact on achieving the desired dimensions of quality and the way in which different attributes are perceived and assessed. A process that, based on product properties and expected quality, ultimately leads to the motive of purchase^[3]. In the subjective context, quality is defined not only in accordance with the functional needs of the consumer, but also the needs related to the sphere of his social, political, cultural, ethical or environmental relations^[4]. From a consumer perspective, food quality can be viewed as a set of specific properties that a product should have in order to meet their expectations. These expectations need to be taken into account in terms of realizing immediate and future benefits, including the impact on health and quality of life in general^[5]. The perception of food quality by the consumer is the result of his previous experience and knowledge of the product^[6], and does not necessarily stem from rational premises. Namely, the perception of quality can be explained in accordance with the attitudes or beliefs of consumers based on their cultural status or socio-economic position in society. Thus, it is clear that no matter how the consumer is motivated, purchasing decisions will depend on his food patterns as a consequence of socio-economic conditioning. Therefore, in addition to the purely economic dimension, the perception of food quality is conditioned by health motives that do not have to be purely personal, but can be linked to concern for general ecological balance, or the impact of food production on the environment and people in general^[7]. Very often the quality of food is associated with its geographical origin. The effect of geographical origin or country of origin is important in understanding and interpreting local food production, and consumers perceive such products through the overall dimension of quality. Evidence shows that consumers see an opportunity to be faithful to locally produced food products^[8], that is, consumers recognize the superiority of the characteristics of locally produced products based on the effect of proven origin. This feeling can be considered in a way a reflection of a kind of consumer ethnocentrism, or a kind of emotional local patriotic dimension of consumer behavior^[9]. Therefore, this irrational consumer status allows small and / or local producers in particular to better counter large systems that base their competitive advantage on economic resilience based primarily on economies of scale and marginal costs that allow them ideal profit margins. Previous research has shown that the commitment to locally produced products in the field of food production may explain different aspects of purchasing behavior and consumer attitudes towards imports in relation to domestic products^[10].

Consumer awareness of food safety and its nutrition itself is linked to health and a healthy lifestyle. To avoid any health risk resulting from improper food consumption, consumers adjust their behavior based on awareness of eating habits and the way food is used. At the same time, there is public awareness of the role of diet in contributing to health. What people buy and eat and the way they manage food depends not only on the individual, but also on social, cultural, economic and environmental factors. Food safety is one of the most important public health issues in the world. Food quality and safety are critical to consumers and are an integral part of all food industry programs. Consumer education has also been identified as a key element as consumers also have a role to play in maintaining food safety throughout the food chain. Namely, they have the right to express their opinion on food control procedures, standards and activities used and implemented within the food supply chain, while consumers can play an important role in ensuring food safety and quality. On the other hand, the ultimate responsibility for implementing and achieving appropriate levels of food safety quality lies with the food industry, which oversees food production and processing, from raw materials to the finished product. Since food companies, in accordance with the defined concept of food quality, are highly dependent on consumer satisfaction, they must continuously invest in the development of safety aspects of their products. It is therefore in their interest to establish and manage controls that ensure that their products truly meet consumer expectations for safety and quality.

Due to all the above, the food production sector must work closely with the scientific sector, monitor the development of technology, invest and develop its logistics network and management disciplines required for the operation of the food supply system. Food producers must be involved in the process of setting standards at national and international level. They are obliged to provide their knowledge of the food supply system in this process in order to guarantee its efficiency and effectiveness and to ensure that it results in the supply of safe and quality products. This involvement is beneficial to consumers and society, as well as to industry.

To ensure safe products, the management of the food industry requires an organized way of defining and controlling the relationship of critical factors in a comprehensive food supply system, including product research and development, production and distribution, and consumer satisfaction. Quality assurance includes the development, organization and implementation of various activities aimed at maintaining and /or improving product safety and quality. This process begins with product development and continues through the selection and procurement of raw materials, and through processing, packaging, distribution and especially marketing.

5.2.1 Types of food quality

The basis for the classification of food quality arises from the basic difference between the concepts of subjective and objective food quality because such differentiation is important precisely because of the understanding and better interpretation of food quality from a consumer perspective^[6]. In fact, the subjective quality of food is a factor that predominantly influences marketing decisions, because it is exclusively consumer-oriented. In addition to the product itself, the consumer may be affected by other factors such as the situation at the time of purchase, price or method of distribution. According to Brunsø et al^[11], four types of food quality can be distinguished (Figure 1).

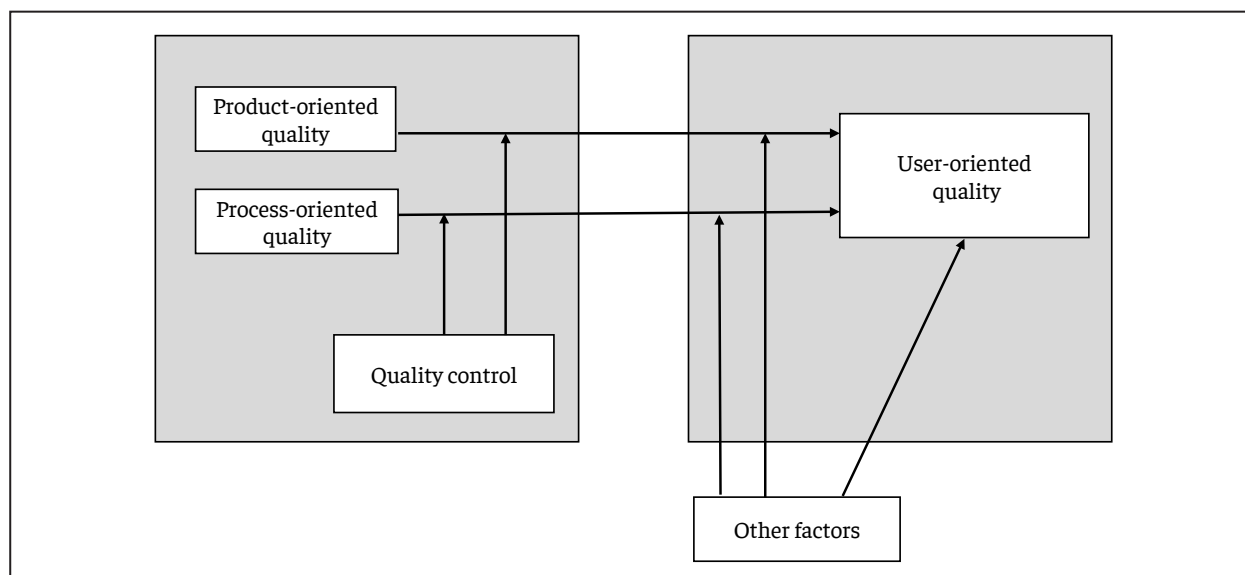


Figure 1. Food quality types
 Source: Brunsø et al., 2002

Product-oriented quality encompasses all aspects of a physical product that together provide an accurate description of a particular food product. Examples of product quality are the percentage of fat and muscle mass of meat, the content of cells in milk, the starch content in potatoes and the strength of alcohol in beer.

Quality oriented to the process of production and processing includes the way in which the food product is produced. Whether the use of pesticides was avoided in primary production, ie organic production, or whether there was no growth inhibition, ie production was carried out in accordance with animal welfare regulations, etc. Descriptions based on these and similar production and processing aspects provide infor-

mation on the process used to create the final product, and these aspects do not necessarily affect the physical properties of the product.

The third type of food quality is quality control, which is defined as the standard that a product must meet in order to be approved for a certain quality class (e.g. the standard for egg weight for different sizes and the like). Furthermore, quality certification schemes such as ISO 9000 mainly deal with quality control. Quality control therefore deals with compliance with specific standards for product and process quality, regardless of the level at which they are defined. It can be said that product quality and process-oriented quality deal with the level of quality, while quality control deals with the dispersion of quality around a predetermined level.

Finally, user-centered quality is a subjective perception of quality from the user's point of view; the user may be an end user or an indirect user in the food chain, e.g. a retailer.

Product-oriented quality, process-oriented quality and quality control can also be said to represent objective quality, as they can be determined by measuring and documenting aspects of the product and production process, and several such measurements of the same product or production process will be identical within error measurements. Customer-oriented quality can be said to represent subjective quality because it can only be measured by the end user and can differ for the same product among users.

All these types of food quality are interconnected in some way. Thus, user-centered quality is affected by all three types of objective quality. However, these relationships do not always have to be clear and strong, because customer-oriented quality can be influenced by factors other than the characteristics of the product itself, such as the purchasing environment, point of sale, price, brand, etc. Much of the discussion about quality the food industry deals with quality and quality control oriented to products and processes, while the consumer evaluates and pays for subjectively perceived quality. The amount a consumer is willing to pay for a product depends on this subjectively perceived quality which is related to objective quality but is not the same. Improvements in objective quality, which do not affect the perception of consumer quality, will not have a commercial effect, and thus no positive effect on the competitive situation of producers^[13].

5.2.2 Consumer assessment of food quality

Although there have been many approaches to the analysis of subjective quality in the social sciences, its multidimensional and hierarchical approach can be distinguished^[14].

Most approaches assume that the perception of quality is multidimensional, that is, that quality is perceived by combining a number of product dimensions or characteristics. Economic theory of product quality makes a big difference between consumer research and demand, its experience, and the credibility of a product. Search characteristics, such as egg size or meat color, can be determined before purchase. In contrast, experience as an organoleptic perception of an individual can be established only after the product has been consumed and experienced. Unlike the first two characteristics, the consumer cannot find out if it is credible before the purchase, but it actually takes time and experience for the consumer to establish its credibility even after the purchase. For example, how can the consumer really realize that a product is produced according to the principles of organic production? Does the weight of the package really correspond to the weight on the declaration, etc. Therefore, the manufacturer or his products are expected to respect and guarantee what the product declares, so the credibility of the product is the trust gained and developed on the relation producer-consumer. It can be said that today trust, ie the delivery of true values, is the foundation of a long-term relationship with the consumer.

In the process of explaining multidimensional subjective quality of food, ie other consumer products in general, it is usually interpreted by referring to so-called multi-attribute attitude models^[15], where the overall evaluation of the product is explained in terms of its perceived characteristics, evaluation of these characteristics and integration rules. Perceived characteristics of a product may differ depending on the performance of its internal or external attributes^[16]. Internal attributes refer to physical product attributes, while external attributes refer to elements such as brand, price, physical environment, services, people, etc. So what can be identified as a key issue for the consumer food quality evaluation process is why certain product characteristics contribute positively to the overall evaluation of the product while others do not.

Therefore, a product attribute is not relevant in itself, but only to the extent that the consumer expects the attribute to lead to one or more desirable or undesirable consequences^[17]. On the other hand, the relevance and desirability of these consequences are determined by the consumer's personal values. The consumer is motivated to choose a product if it leaves the desired consequences, thus contributing to the achievement of personal values. Thus, the subjective perception of consumer products is established by associations between product attributes and more abstract, central cognitive categories such as values, which can motivate behavior and create interest in such a product. In the field of food production and sales, it is very important to link product attributes with the consequences of consumption that lead to higher levels of quality of life or personal satisfaction and happiness^[18]. Thus, for example, the color of an individual fresh food product associates or may lead the consumer that such a product is fresh, healthy, real and full of flavor, ie the expected quality is delivered while satisfying certain intrinsic subjective motives of purchase. The established model of subjective perception of quality and delivery of demand is the fulfillment of basic consumer goals, which are to meet his wishes and needs^[19], and is an important factor in understanding the subjective perception of product quality and is the main contribution to the model for overall food quality through analysis the process of perceiving the quality of food products.

5.3 Total food quality model

Consumer demand for adequate product and its assessment, consumer experience and product credibility are important elements in understanding the subjective perception of quality and are the main contributors to the model of overall food quality, ie the findings of the process of food quality perception. The Total Food Quality Model (TFQM) was developed by Grunert et al^[6] and is based on the concept that food quality is divided into four groups (Figure 2).

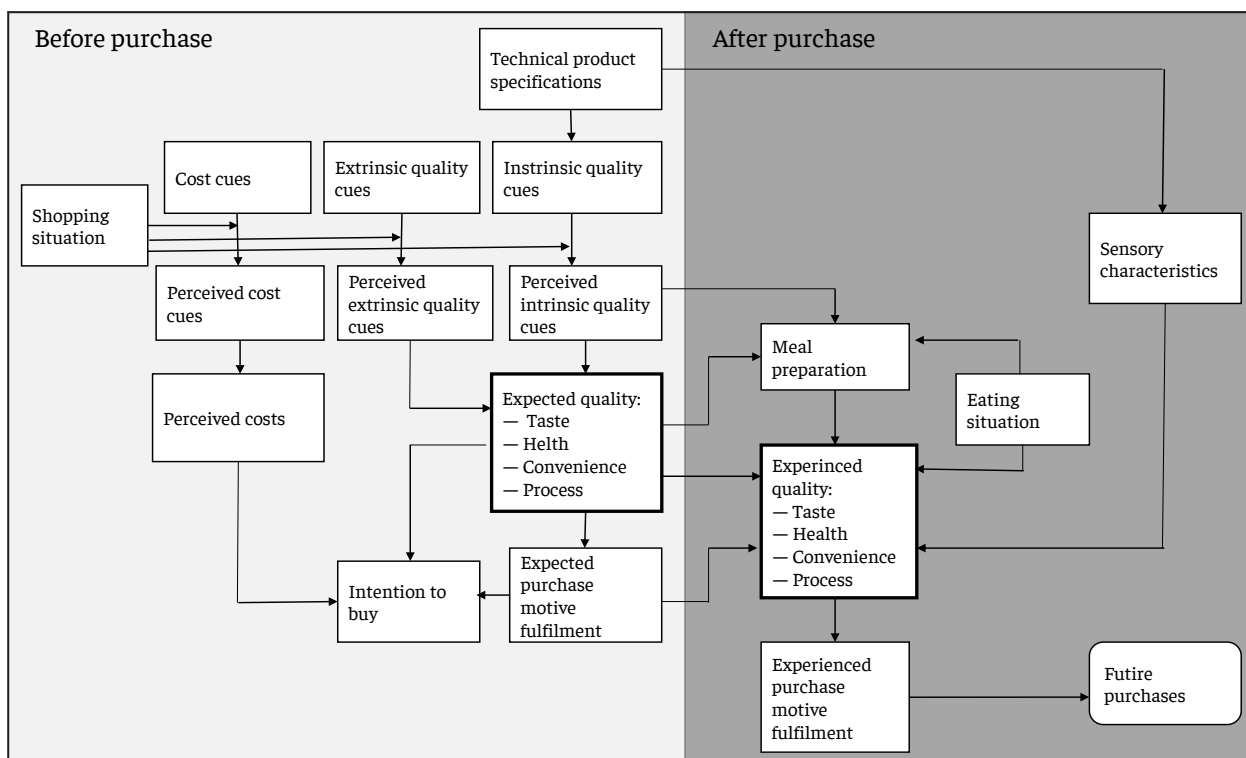


Figure 2. Total food quality model (TFQM)

Source: Grunert et al.^[22]

The basis of the overall food quality model is the difference between the evaluation of food products before and after purchase. Most food products have the characteristics of its assessment and evaluation only to a limited extent. In order to make a choice, the consumer develops the domain of his own expected quality,

but only after consumption can the experienced quality be determined. The pre-purchase component of the model shows how quality expectations are formed based on available quality attributes. Attributes of internal quality are related to technical product specifications – that is, characteristics that can be measured objectively. External quality marks represent all other characteristics, such as brand name, price and packaging.

The way consumers use quality labels to realize expected quality can be quite complicated and, at first glance, sometimes seems quite irrational. For example, consumers use the color of fruit or fish to assess their freshness, the consistency of dairy products to define taste, or the shape or packaging of individual products to define sanitation.

Among the individual appearance characteristics of the products to which consumers are exposed, the influence on the definition of the expected quality is assigned to those who are actually perceived^[20]. The emerging characteristics of the products to which consumers are exposed and to which they react influence purchasing decisions

According to the model of overall food quality, quality is not an end in itself, but is desirable because it helps to satisfy the motive or value of the purchase. The values sought by consumers, in turn, will have an impact on the search for quality dimensions, and on how different attributes and characteristics of products are perceived and valued. Expected quality and expected fulfillment of the motives of purchase represent the positive consequences that consumers expect from the purchase of a food product, and are compensated with negative consequences in the form of costs. Compromise determines the intention to buy. Price can be both an indicator of price and a sign of external quality. After the purchase, the consumer will have a quality experience that often deviates from the expected quality. Experienced quality is influenced by many factors: the product itself, especially its sensory characteristics, but also the way the product is prepared, situation factors such as meal type, consumer mood, previous experience, etc. Expectations themselves can also be an important variable in determining experienced product quality^[21]. It is believed that the relationship between quality expectations and quality experience determines product satisfaction and thus the likelihood of repurchasing the product^[22].

The total food quality model does not explicitly include price as an external attribute because it does not consider it as perceived value, but instead includes perceived quality and perceived costs.

5.3.1 Dimensions of quality

The model of total food quality looks at quality as a mental construct of consumers, and distinguishes between expected and perceived quality. In addition, it sees quality as an abstract construct, derived from information available in the consumer environment and his own experience, which are key to motivating to buy. Thus, food quality is a multidimensional phenomenon. In particular, from the consumer's point of view, food quality, expected and perceived, has four main dimensions: These dimensions appear to be taste and appearance, health dimension, functionality and process^[23].

For most people, food has always been a matter of pleasure. Hedonistic characteristics of food, primarily taste, but also appearance and smell, represent a central dimension of quality for consumers. But in recent decades, consumers have shown increasing interest in other dimensions of quality. The hedonistic quality dimension mainly represents the experience characteristic of a food product, since the taste can usually be established only after consumption.

The health dimension of quality has become very important for many consumers, and numerous studies show that today health is just as important as taste, and that consumers form preferences based on this dimension motivated by expectations of longer life and higher quality life^[24]. Health-oriented food quality is considered to be the way consumers perceive a food product and how it can affect their health. This includes functional food quality. Consumers are also concerned about safety and risk issues.

Complementary to food health issues, consumers are increasingly attaching importance to the way food is produced. Namely, the production process itself has become an object of consumer interest, and thus also a dimension of quality, even when there is no direct impact on the taste or health of the product. This quality dimension includes, for example, organic production, production that takes into account animal welfare

and GMO-free production. This dimension of quality is also a feature of credibility, as the consumer must rely entirely on guarantees of quality geared to production from different sources.

Finally, another factor is of growing importance for consumers, and that is the practicality and functionality of food. From a consumer point of view, convenience is much more than ease of purchase or quick consumption. Convenience means saving time, physical or mental energy in one or more phases of the entire meal process: planning and buying, storing and preparing products, consuming, and cleaning and disposing of leftovers.

The four dimensions of quality should not be viewed independently of each other, it can be seen that there are overlaps and interrelationships. These interrelationships are ambiguous and vary from product to product. For example, consumers sometimes feel that good taste and health are positively correlated, and at other times negatively correlated. Sometimes taste is considered to be related to the process quality dimension, and sometimes not. Such conclusions are typical of consumer quality perception.

5.3.2 Consumer segments

Although these dimensions of food quality are quite universal, their relative importance can vary significantly from consumer to consumer. In general, food selection processes and quality perceptions are characterized by individual differences, not only will there be differences in the relative importance of quality dimensions, but also in the way it is perceived from its individual characteristics, in the way consumers buy and thus become exposed to different types of food characteristics.

In order to take these differences into account, different segments of food consumers need to be distinguished. Consumers are categorized according to their different ways of buying, ways of preparing food, situations in which they consume food, ways of assessing qualitative dimensions and motives for buying food, or their food-related lifestyle^[25].

Consumption and consumption of food is one of the fundamental motives for achieving the elements of quality of life. Consumer life, which is directly linked to the purchase and consumption of food, is also reflected in the establishment of food consumer segments^[12]:

1. *Passive consumers of food* – for them food is not a central element in life. Consequently, their motives for buying food are weak, and their interest in food quality is limited mainly to the convenience aspect. They are also uninterested in most aspects of shopping, do not use specialty stores, and do not read product data, limiting their exposure and processing of food quality labels. Even their interest in the price is limited. They have little interest in cooking, tend not to plan meals and eat out. Compared to the average consumer, these consumers are free, young, have part-time or full-time jobs, average to low incomes and usually live in big cities.
2. *Carefree food consumers* – these consumers resemble the non-compulsory food consumer, in the sense that food is not very important to them, and, with the exception of practicality, their interest in food quality is extremely low. The main difference is that these consumers are interested in news, love new products and try to buy them spontaneously, at least if they do not require a lot of effort in the kitchen or new cooking skills. A carefree food consumer in general, like an unrestrained food consumer, is young and often lives in big cities. But unlike those who are not included, these consumers are more educated and are in the upper income classes.
3. *Conservative food consumers* – for these consumers, safety and stability achieved by following traditional feeding patterns are the main motive for buying. They are very interested in the taste and health aspects of food products, but they are not particularly interested in comfort because meals are prepared in the traditional way and are considered part of women's tasks. Conservative food consumers have the highest average age and are the least educated. Households are smaller on average, and household income is generally lower than the income of other segments. These consumers usually live in rural areas.
4. *Rational food consumers* – these consumers collect and evaluate a lot of information when shopping, look at product data and prices, and use shopping lists to plan their purchases. They are interested in all aspects of food quality. Self-fulfillment, recognition and security are the main motives for buying

for these consumers, and their meals are usually planned. Compared to the average food consumer, this segment has a higher share of women with families. The level of education and income in this segment varies from country to country, but they usually live in medium-sized cities, and a relatively large proportion of these consumers do not work.

5. *Adventurous food consumers* – although these consumers have a slightly above-average interest in most aspects of quality, this segment is mainly characterized by the effort they put into preparing meals. They are very interested in cooking, looking for new recipes and new ways of cooking, involving the whole family in the cooking process, not interested in convenience and rejecting the opinion that cooking is a female task. They want quality and are looking for good taste in their food products. Self-fulfillment with food is an important motive for buying. Food and food products are important elements in the lives of these consumers. Cooking is a creative and social process for the whole family. The adventurous food consumer is generally from the younger part of the population, and the household size is above average. Adventurous food consumers have the highest level of education and high incomes. They tend to live in big cities.

It should be noted that the types described above are the basic segments of food consumers. In addition to these, there may be idiosyncratic segments that differ slightly from the basic types described above. But the fact is that taste and health are very important dimensions of quality, both in all countries and among segments.

5.4 Risk perception in terms of food consumption

Food is an important component for the development of the human body and the maintenance of life, and the promotion of health and the prevention of disease through a healthy diet are increasingly recognized as crucial in the modern world. The act of eating also has a strong social connotation, closely related to family unity, religious festivals and various forms of integration^[26]. It is generally accepted that food produced and placed on the market today is safer than in the past, there are still possible situations when this safety is called into question, which can undermine consumer confidence and endanger their health. In addition to scientific information, knowledge of how consumers perceive the different risks they are exposed to in their diet and how it affects their consumption decisions is important for shaping food safety strategies, both for food business operators and the public sector, which is directly responsible and oversees the issue of general health security of the population.

The cognitive mechanisms of an individual condition the perception of food-related risk. They may differ from the risk of non-food products, essentially because food is a vital necessity and part of people's daily lives^[26]. Some determinants seem to be particularly important in shaping people's reactions to food risk. For example, food of technological origin is perceived as more dangerous than natural food. An additional complication arises from acute versus chronic risk. For example, presenting a naturally occurring risk in an acute or crisis context (such as poisoning) may worsen the perception of risk. Figure 3 shows three dimensions of risk perception, natural and technological, controlled and uncontrolled, and new / unknown, or old / known risk^[27]:

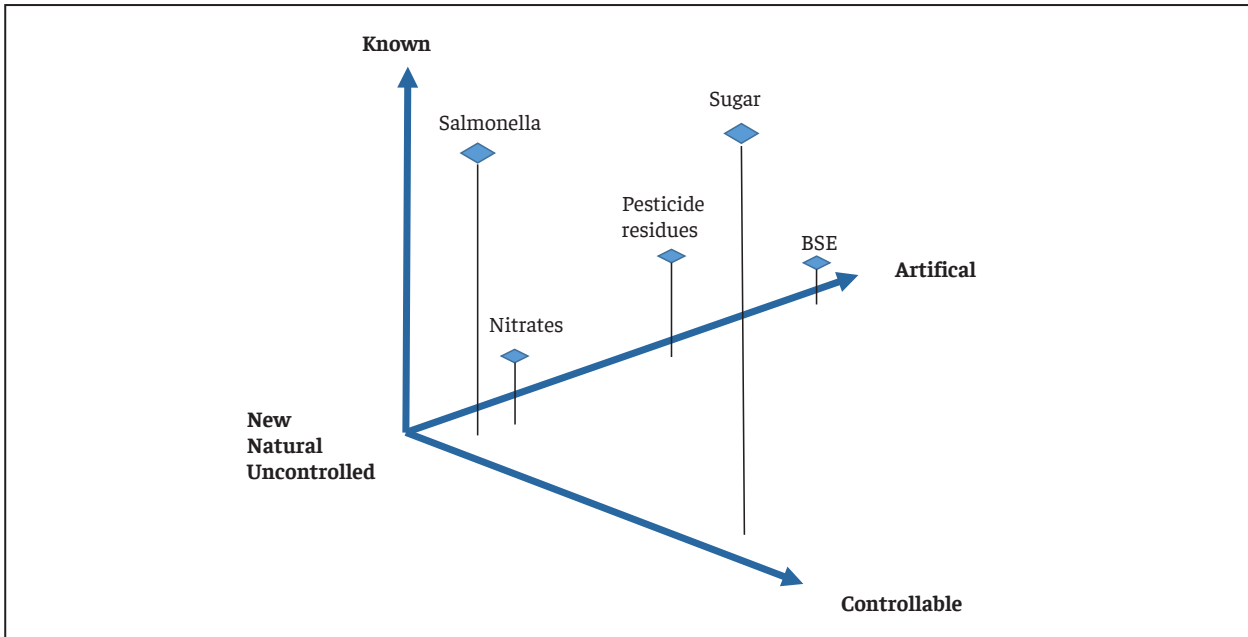


Figure 3. Three dimensions of risk perception with food
 Source: Breakwell (2000)

For example, it can be concluded that sugar is in a high position on the axis of knowledge and risk control and is also recognized as a natural substance. However, pesticides have a low to moderate level of cognition, no control and are perceived more as technological / artificial than natural risks.

Gender, ethnicity, age and geographical area may be potential sources of variation in risk perception^[27].

In the 2019 Eurobarometer^[28], respondents mentioned the presence of antibiotics, hormones and pesticides in food as worrying food safety risk factors. Respondents also point to a personal interest in food safety, with a large number showing a high level of food safety awareness. Residents of the European Union are showing a kind of concern because they are of the opinion that food products are full of harmful substances. They are particularly critical of dyes, preservatives and additives, but also of antibiotic, hormone or steroid residues in meat, as well as the presence of pesticides in food (Figure 4).

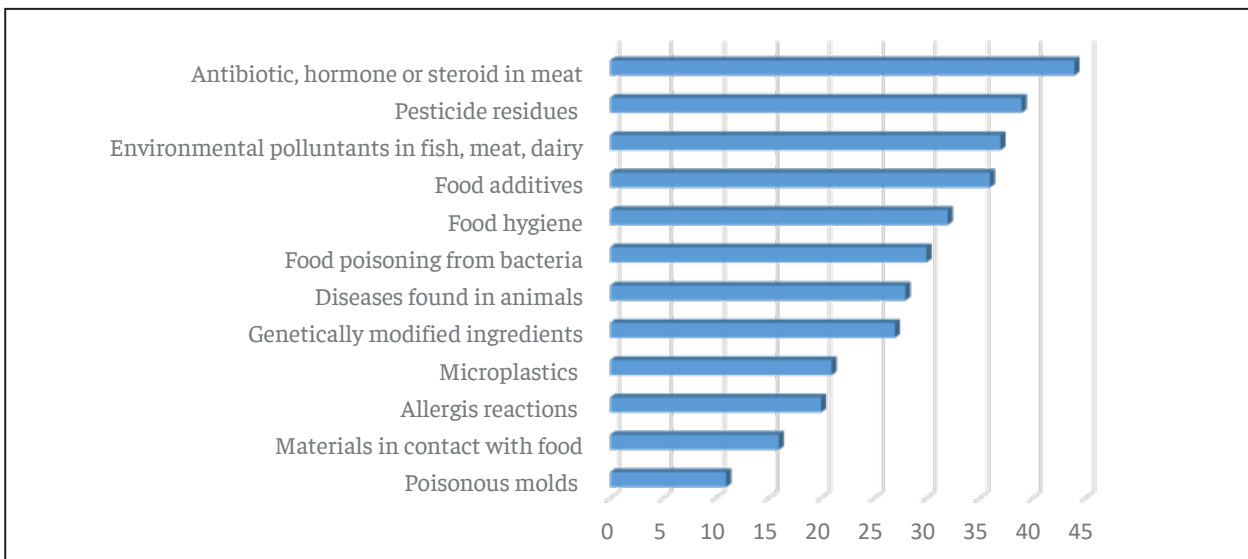


Figure 4. Main topics related to food which worry Europeans
 Source: European Commission, 2019

It can be concluded that the perception of risk associated with food consumption is multifactorial and highly complex, which depends less on objective and roughly measurable risks than on subjective issues.

These issues encompass social, cultural, psychological, ethical, and moral aspects, which together make up what are called values or worldviews. More than rational and decisions based on technical-scientific knowledge, the emotional and intuitive side of individuals strongly contributes to the perception of food risks and their balance in relation to the realized benefits. In this sense, risk communication strategies aimed at filling gaps in scientific knowledge are usually ineffective if they are not aligned with approaches that consider and respect the human dimension that permeates the universe of perceptions.

5.5 Risk and benefit associated with food production

Food supply is generally considered healthy, nutritious and safe. However, a modern industrial food system can result in unwanted or unexpected outcomes that pose a threat to consumer health. Specific risks for consumers are microbial pathogens in food, so food-borne diseases can develop secondary diseases or complications such as arthritis after some salmonella infections. Pesticide residues and other chemical residues can remain on fruits and vegetables, and prolonged exposure to such chemicals in the diet can pose a risk of cancer or other adverse health effects. News of foodborne illnesses spreads easily and quickly, contributing to growing public concern about the problem. Therefore, the task is to provide a legal framework that can maximize the net benefits of increasing food safety, ie equating the marginal benefits of safer food with the marginal costs of achieving food safety objectives.

5.5.1 Consumer risk perception

In the area of food production, consumer responses appear to be dependent on perceptions of the risks and benefits associated with specific applications. The higher the perceived risk associated with a particular food production technology or associated hazards, the less favorable consumer attitudes^[29]. Consumer attitudes towards food production technology include not only assessments of potential personal benefits and health effects, but also take into account moral attitudes and beliefs, such as ethical and moral considerations, and values such as concern for the integrity of nature^[30]. The public perception that institutions and industries are forcing the introduction of genetically modified food to protect their own interests, rather than to support social welfare, has not alleviated social problems at all. In the future, new technologies applied in food production or convergence between different technologies in the agri-food sector (eg information and communication technologies, biotechnology, cognitive sciences and nanotechnologies) may raise other public concerns in conditions of increased complexity and uncertainty regarding and risks and benefits associated with food production processes and food products produced by those processes^[31].

There is some evidence that the perceived risks and benefits associated with different food production activities or technologies are negatively related. That is, high levels of perceived risk are associated with low levels of perceived benefit, and vice versa. However, in the real world, high levels of risk have been found to be acceptable only when they are offset by high perceptions of the level of benefits^[32]. Several theories have been developed and tested to explain the negative relationship between perceived risk and benefit. It is assumed that consumers' perceptions of risk and benefits depend on consumer confidence in institutions and industry. For example, when trust in scientists, government, and industry was controlled in the analysis, the inverse relationship between perceived risk and perceived benefit associated with different hazards decreased. Although it has been suggested that perceived risk is reduced when public knowledge, regulators and risk managers are trusted to control risks, other studies have shown that other dimensions of trust, such as caring for the public well-being of different actors, could outweigh perception. and risk attitudes. In addition, previous attitudes toward hazards or food production technologies may affect who the public trusts or dislikes. For example, if people have a strong attitude about a potentially dangerous activity, such as genetic modification of food products, they are more likely to trust the source sending the message according to their attitude, and they will not trust the source that provides the discrepancy. This means that trust does not necessarily affect risk perception and technology acceptance, but that overall attitudes can also guide more specific risk and trust perceptions. In close connection with this, affective responses to

danger or emotions caused by a certain topic of danger lead to the perception of risks and benefits. Affective responses to an event or object can serve as a mental shortcut in assessing risks and benefits. Using influence in the processing of cognitive information could be more efficient in terms of allocation of mental resources and easier to use compared to analytical reasoning about benefits and risks, and could be particularly useful when mental resources are limited. It has been empirically proven that the impact comes first and affects risk and benefit assessments^[33]. Thus, in conditions of time pressure, evaluations of low-risk, high-benefit activities and technologies were more frequent, compared to conditions in which no time constraints were applied. When individuals can obtain adequate information about the degree of risk or benefit, it can have a beneficial effect on later risk and benefit assessments. That is, information indicating a high benefit increases subsequent benefit assessments, but also reduces the perception of risk associated with the activity or technology of food production under consideration. Risks and benefits are not assessed independently of each other, these consumers make affectively matched risk and benefit assessments. The tendency for the overall affect to serve as a sign of judgment is also called the heuristic of affect^[34]. Namely, alternative perception of risk can be understood as a type of feeling that includes worries, fear or anxiety as agents of risk situations.

Furthermore, perceived risk and benefit may be inversely related, as consumers have a need for consistency in beliefs, and as such seek to avoid cognitive dissonance or conflict between different beliefs. Thus, it is cognitively difficult for consumers to perceive the great risks and great benefits associated with the same dangers at the same time. Finally, the inverse relationship between risk-benefit assessments could be explained to consumers who make judgments about “net risk” and “net benefit” because they do not assess risks and benefits independently of each other^[35]. This means that when the net risk is high, the net benefit is low, and vice versa.

5.5.2 Food safety risk communication

Effective communication on the risks and benefits of food is important from the perspective of optimizing consumer protection associated with food consumption^[36], and increasing social confidence in those institutions responsible for assessing and managing (perceived) risks in food. The need for effective risk communication could arise from the application of specific agricultural practices or food processing technologies that may raise societal concerns, such as genetic modification of crops and animal husbandry. Alternatively, the need for effective communication with the public may arise due to chemical, microbiological or physical contamination of food. In addition, communication may be needed as a result of a food crisis following an incident in the food supply chain or after the identification of new scientific knowledge about specific risks in food.

In addition to the impact on human health, communication may also focus on the potential environmental impacts of food production and the risk mitigation or management measures applied to mitigate the risk^[37]. In addition, risk communication is important in relation to various socio-economic impacts, for example, on employment, food costs, livelihoods in rural areas or cultural structures and institutional relationships. Examples of different types of food safety issues, which are classified according to whether they were intentionally or accidentally introduced into the food chain or occur naturally.

Various factors can be identified that may influence the determination of the effectiveness of risk communication, whether it is designed to reduce consumer risk behavior or as a basis for informed choices regarding food consumption decisions. Food consumer risk perceptions should be taken into account when developing an effective risk communication strategy, including whether a potential hazard is considered artificial or natural, or was accidentally or intentionally introduced into the food chain. Whether the risk is presented in an “acute” or “chronic” context is also relevant when considering the communication process. Consumer confidence in the information provided, as well as the established regulatory framework for protection and transparency of decisions can also be influential and should be included in the development of effective information, where relevant. Communication on uncertainty about the risks and benefits of scientific assessment may also be relevant and needs to be disseminated in terms of consumer protection or building consumer confidence.

Therefore, an important question in the field of food risk communication is whether different approaches with greater or lesser degree of success have been applied for different types of potential hazards and whether the time frame affects the success of communication.

5.6 Observed quality and safety related to readiness to purchase

The importance of any marketing strategy lies in achieving the quality of the product or service, or the benefits that are delivered to consumers. Quality can be understood as all those products and services that meet the explicit and implicit needs of consumers^[38]. Through the development and maturation of the marketing paradigm and through its application, the foundation of quality policy was product control before reaching consumers.

The goal of current marketing policies is to translate the perception of consumer food quality into objective parameters, product attributes, and through the development of new improved food products. Studying the perception of consumer food quality is one of the most complex areas in researching consumer behavior. As a consequence of any food crisis, consumers feel greater concerns about food quality and safety, seeking greater transparency in the food chain and more information on the different quality characteristics of food. Understanding consumer perceptions, attitudes and behaviors regarding food is of great importance. Knowledge, knowledge and information about nutrition and health are the cognitive and affective precursors of consumer attitudes, perceptions and beliefs.

Today, food as a product can provide benefits that are hedonistic or utilitarian in nature^[39]. Hedonistic products enable more experiential consumption by provoking fun, pleasure, excitement, happiness, imagination or enjoyment, while utilitarian products are primarily instrumental, functional, goal-oriented and associated with self-control^[40]. Hedonistic attributes or values are important for food selection in general.

Consumer behavior when buying food has changed significantly around the world. Increased health awareness and a changing lifestyle, along with growing concerns about the benefits of food for a healthy and stable life, have led to significant changes in consumer behavior towards food consumption. Consumers are becoming increasingly aware of the importance of food safety and its impact on their health. Moreover, consumers are also increasingly clinging to the country of origin of food in their purchasing decisions. The choice of food consumers is influenced by various factors related to demography, psychography and product and market offerings. With increasing awareness of the health and properties of food products, it becomes important to understand whether consumers are willing to pay the extra amount of money to buy the right food products

Willingness to pay is the highest price a consumer is willing to pay for a product or service. Willingness to pay can vary significantly from consumer to consumer. Willingness to pay is determined by external or internal motives for payment. Motives are easily identifiable and are usually those factors that can generally be detected such as age, gender, income, education and place of residence^[41].

Internal motives, on the other hand, represent the characteristics of the individual. They are difficult to spot and are often referred to as “imperceptible differences”. An individual’s risk tolerance, desire to fit in with others, and level of passion for a particular topic are examples of intrinsic motivations that can affect their willingness to pay.

When a consumer has an urgent need, he may be willing to pay a higher price than when his needs are less urgent. Similarly, an actual or perceived shortage of supply could make them more willing to pay a higher price than when there is a surplus. On the other hand, the willingness of consumers to pay may be lacking due to the emergence of a new competitor with a stronger brand recognition or perception that the product or service is outdated.

By determining consumers’ willingness to pay, food companies can set their prices to a level that allows them to maximize profits and consumer satisfaction.^[42]

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