

# CONSUMER PREFERENCES AND WILLINGNESS TO PAY FOR THE HEALTH ASPECTS OF FOOD

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**Received: March 8, 2011**

## Abstract

MIŠKOLCI, S.: *Consumer preferences and willingness to pay for the health aspects of food*. Acta univ. agric. et silvic. Mendel. Brun., 2011, LIX, No. 4, pp. 167–176

Agri-food systems in the Czech Republic are currently undergoing a profound transformation toward high-value products. Appropriate policies are needed to guide this transformation, presupposing good understanding of consumer preferences. Having established a general framework for the analysis of food choice and quality perception, second part of the paper gives overview of results of stated preference evaluation studies conducted in the Czech Republic. The objective of secondary data analysis is to evaluate consumer preferences and willingness to pay for the food quality with the special attention to an evaluation of consumer preferences for health aspects of the food. The consumers' relative preferences toward the different dimensions of a product's quality are measured from the consumers' perspective via their preference scores on various dimensions of quality derived from Analytic Hierarchy Process (AHP). Price premium consumers are willing to pay for the high quality product is investigated using Contingent valuation method (CV). In general, the empirical evidence supports the hypothesis that health ensuring and enhancing characteristics together with sensorial characteristics significantly affect consumers' preferences for food and most consumers are willing to pay a price premium in order to ensure required quality of food.

food quality, consumer preferences, AHP, WTP, health aspects

From the 1990s, there has been a shift away from nationally based, supply oriented agri-food systems in the Czech Republic. The growth of disposable income and the rise of consumerism, the liberalization of trade in food and agricultural products have started the movement towards globalised, deregulated, demand-oriented food-chains. These changes in the market for both fresh and processed food products call for a repositioning of existing food production systems in which the consumer needs and wants are starting point of thinking.

The primary role of food is to provide sufficient nutrients to meet the nutritional requirements of an individual. However current trends in population demographics and socio-economic changes, such as increase of live expectancy and desire for an improved quality of life together with increasing costs of health care, create new challenges for the world food industry. The subject of the quality and health claims are becoming increasingly important

also within a regulatory framework of EU that is challenged to promote and ensure healthy and safe nutrition, fair trade and to encourage product innovation in the food industry.

Recent growth in understanding the relationship between nutrition and health resulted in the development of the new concept of functional food that can contribute benefits beyond those of basic nutrition. It represents a practical and new approach to achieve optimal health status by promoting the quality of life and potentially reducing the risk of disease. Functional foods are defined as those foods that contain biologically active components which offer the potential of enhanced health or reduced risk of disease.

From the latest development it is clear that competitive position of the regional Czech food and drink industry will depend not only on continued advances in nutrition science, on the development of innovative technologies by the food industry, and on the way in which access to

the market place is mediated by the regulatory environment. The communication of quality and health benefits to consumers and the positioning of regional food products are also of critical importance. The competitive advantage should be build on the development of the competencies in the optimization of sensory properties of foods, the negotiation power in securing retail distribution for the products, and experience with attractive pricing and packaging of foods. Hence a major current focus of research is to increase an understanding of the role of food components in maintaining and improving well-being and health of the population on the one hand, and consumer reactions to quality and health claims on the other.

Growing awareness about health impact of food has prompted numerous studies that investigate various aspects of food quality also in the Czech Republic. Assuming that food quality is a competitive priority, regional food producers must understand how to focus their efforts for the quality improvement. Given that there are many aspects of food quality, there is also a need to determine which of these are the most important to the consumer – the ultimate judge of quality in the demand-oriented agri-food channels. Drawing on the lessons learnt from the empirical work, the objective of this paper is to summarize and give the overview about the methodology of the consumer preferences measurement and willingness to pay price premium for the food quality, with the special attention to an evaluation of consumer preferences for health aspects of the food. Having established a general framework for the analysis of food choice and quality perception, the secondary data analysis is aimed to answer following research questions: (1) How can product quality be measured from the consumer's perspective? (2) Are all dimensions of food quality of equal importance, or are some dimensions more important than others? How important are the health claims in relation to other attributes of the food quality? (3) What is the value of improving food quality and functional food development?

## **THEORETICAL BACKGROUND AND METHODOLOGY**

The consumer food choice process is a complex preferences function of sensorial characteristics and non-sensorial factors, including expectations and attitudes, health aspects, price, ethical considerations and inner state. Because of the consumer's perception of food quality is based on a number of characteristics rather than a single attribute of the product, it is important to identify the relative importance of the characteristics or attributes of the food quality. Diverse methodologies have been developed to analyze consumer behavior related to food choice. Most of them assume quality as a multidimensional concept, i.e. quality is perceived by combining a number of quality

dimensions or characteristics of product. Numerous studies that investigate various aspects of food quality were conducted also in the Czech Republic, however very few examined empirical studies establish exactly what consumers mean when they say one product is of higher quality than another. Notable exceptions are the works that integrates the multi-attribute approaches to quality perception.

To measure a food quality, it is necessary to first identify the dimensions of quality associated with the product. Given the objective of this paper – measuring food quality from the consumer's perspective, it is important to quantify consumer preferences in terms of both objective and subjective attributes, to identify the relative importance of various dimensions and the overall value of product quality. In addition, safe and functional food is consistent with economic goods that have attributes that cannot be revealed by inspection or ordinary use alone. In practice, health enhancing product attributes are not easily recognized and accessed by the consumer. These credence characteristics of a good are qualities which are difficult or, in some cases, impossible to detect, but which nevertheless can play an important role for the buyer. Information about a health protecting and enhancing food is asymmetric. That is, consumers may not recognize the presence or absence of health enhancing characteristics even after purchase and use. Consumers may only know that the product is safe and health enhancing when they are informed. The quality characteristics of foods that may enter the utility function of the consumer can be grouped into credence (general) and experience (commodity-specific) attributes. Credence attributes relate to food safety and human health, environmental effects, and farm animal welfare aspects, while experience attributes include variables such as taste, freshness, visual appeal, nutritional value, production process and package. Although consumers may not adequately differentiate between health enhancing and other foods with respect to their general attributes, they may recognize the unique taste, visual appeal, or freshness of particular products. However, sensory characteristics (i.e. product taste, visual appeal and freshness) alone may not be sufficient in determining whether a product is health enhancing or not. Consequently, quality signals, such as product information and labels, help transform credence characteristics into search attributes, thereby enabling buyers to more clearly assess product quality.

High quality, safe and health enhancing domestic foods compete with other alternatives in the market. Although many of functional food command a higher price compared to their conventional alternatives, some consumers continue to substitute functional for conventional products. This and other related observations led Lancaster (1966) to argue that the traditional theory of consumer demand is inadequate in explaining why consumers will buy, for example, organic products instead

of conventional-grown alternatives. According to Lancaster (1991), the omission of information about the inherent characteristics of consumer goods in traditional consumer theory renders the theory incapable of handling some important aspects of consumer demand in today's world. Given the above limitations of the traditional theory of the consumer, an alternative approach to consumer behavior was proposed by Lancaster (1966). A consumer is seen as buying characteristics, because they are what the consumer values. His model also addresses how the characteristics of goods can be substituted when relative prices change. For example a price premium paid for the characteristics of functional foods suggests that consumers place a higher value on health enhancing attributes compared to conventional alternatives.

Within the range of techniques that analyze preferences, several alternatives are available. The most recently used methods with the capacity to analyze preferences for a complex good are the Choice Experiment Method (for CE see for example Burton *et al.*, 2001: organic food) and the Analytical Hierarchy Process (for AHP see Scholz and Decker, 2007: wooden furniture; or Miškolci, 2008: agricultural outputs). These techniques are designed to construct and ranking structure of products' attributes and levels offering the opportunity to compare score rank results. While the AHP allow for determining preference scores at individual level, the CE does not. Despite of both techniques have their advantages and disadvantages, Kallas *et al.* (2010) demonstrate in their recent empirical study that there is a 56% coincidence in the ranking of food quality attributes derived from CE and AHP stated preferences techniques, and conclude that these techniques produce relatively similar ranks. In addition, Meißner *et al.* (2008) found, that the AHP task of a pair-wise comparison of attributes and levels is less hard than comparing two or more complex goods in the competitive environment as is the case of CE.

Secondary data analysis reported here was aimed to increase an understanding of the role of food quality attributes with the special attention to an evaluation of consumer preferences for health aspects of the food. Empirical studies selected for the secondary data analysis were based on the methodology, which measures consumer subjective quality using Total Food Quality Model (TFQM) framework as a starting point to identify which dimension(s) is(are) most important to the consumer. The TFQM (Total Food

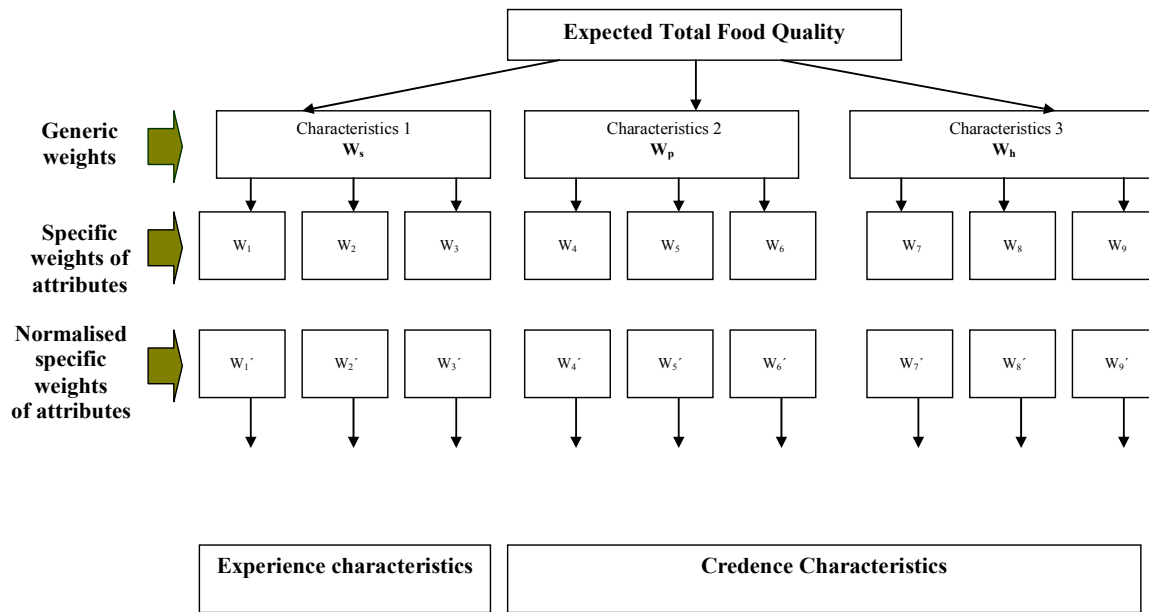
Quality Model), originally proposed by Grunert *et al.* (1996), integrates the multi-attribute and the hierarchical approaches to quality perception. In addition, it integrates two other major elements of consumer behavior theory – the explanation of intention to purchase, as a trade-off between give & get components, and the explanation of consumer satisfaction, as the discrepancy between expected and experienced quality. Given the broad nature of the TFQM, the entire range of social science methods can be applied when using it. Due to the cognitive orientation of this model, some form of interview or questionnaire technique is usually used as the main means of operationalising the various model constructs. The questionnaire have been employed in reported surveys to measure model constructs and the Analytic Hierarchy Process (Saaty, 1996) method to investigate relations between determined attributes for selected dimensions of food quality, which enables one to capture both objective and subjective attributes of fuzzy concepts such as quality.

The AHP method was created by Saaty (1980) as a structured but flexible technique for making decisions in a multi-criteria context. The method is based on approaching complex decision problems using a hierarchical structure. This intuitive way of approaching decision problems can be understood by examining a hierarchical structure of food quality attributes with at least three levels: the complex outcome at the highest level of the structure, decision criteria at an intermediate level and alternatives forming the base of the structure. When criteria are abstract or complex, the intermediate level of the structure can be split into a series of sequentially organized sub-criterion levels. In our case, according to the information gained from the literature review, the hierarchical structure can be explained in three levels: (1) the total food quality – purchase decision problem, (2) criteria (dimensions of food quality) – *credence and experience characteristics* and (3) sub-criteria (specific food quality attributes). Fig. 1 shows this three-level structure.

In the analytical hierarchy process, respondents are asked to state their strength of preference, either between two dimensions of food quality or between two quality attributes of a quality dimension. Within this hierarchical structure, the relative importance or weighting of each criterion or sub-criterion ( $w$ ) is obtained from paired comparisons of criteria. Such paired comparisons are rather easier to understand and answer by respondents than the

I: The AHP pair wise comparison scale

Degree of importance	Definition
1	Both food quality attributes are equally important
3	Very slight importance of one food quality attribute over the other
5	Moderate importance of one food quality attribute over the other
7	Demonstrated importance of one food quality attribute over the other
9	Extreme or absolute importance of one food quality attribute over the other



1: Hierarchical structure of the total food quality

simultaneous comparison of all objectives within the same structural level. In order to utilize these comparisons, Saaty (1980) proposed and justified the use of a 1–9 scale, as shown in Tab. I. As in most empirical studies using AHP, we used this linear scale in our research, since it is intuitive and easy to deal with by previously untrained respondents.

Thus, in order to determine the weightings assigned to each of the proposed quality attribute, respondents (representing society as a whole) must make two kinds of comparison; first, pair comparisons between the quality dimensions or sub-criteria in each category of expected total food quality (three sets of pair comparisons in the present case), and secondly, pair comparisons between specific attributes of food quality. Each respondent thus generates Saaty's matrixes  $A$ , where  $a_{ij}$  represents the score obtained from comparing sub-criterion  $i$  and sub-criterion  $j$ . This square matrix

$$A = \begin{pmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \dots & \dots & a_{ij} & \dots \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{pmatrix}$$

possesses two key properties:

- its principal diagonal is filled by 1's ( $a_{ii} = 1$  for any  $i$ ) and
- it verifies reciprocity among pair comparisons (if  $a_{ij} = x$  then  $a_{ji} = 1/x$ ).

Initially, the AHP decision technique was designed for individual decision-makers, but was promptly extended for group decisions (Easley *et al.*, 2000). Thus, Aczél and Saaty (1983) propose the geometric average method to aggregate the pair comparisons of the Saaty's matrixes ( $A_k = a_{ij}$ ) from the  $m$  people who make up the group (sub-index  $k$ ) to obtain the aggregated Saaty's matrix:

$$A = a_{ij} = \sqrt[m]{\prod_{k=1}^m a_{ijk}}$$

Finally, the vector of weights for the different criteria derives from this aggregated matrix. Along the same lines, Gass and Rapcsák (1998) propose as an alternative using the arithmetic average or the geometric average to aggregate the  $w_{ik}$  weights from each person  $k$ :

$$w_i = \frac{\sum_{k=1}^m w_{ik}}{m}$$

or

$$w_i = \sqrt[m]{\prod_{k=1}^m w_{ik}}$$

in order to estimate the representative weightings for the whole group. For the final hierarchical structure see Fig 1.

Hence the price attribute is not included in the pair-wise comparison in the AHP technique, it assesses the relative importance of non-monetary attributes preferences. In order to capture the value of improved food quality and health aspects to be used in the analysis of the second research question, the term of value was interpreted as the price premium the consumer is willing to spend for improvements. The willingness to pay (WTP) price premium was investigated using Contingent Valuation Method. Estimated WTP could be used as an input or proxy for demand change in welfare analyses of food policy and to provide useful information for food labeling programs (e.g., Zhifeng and Schroeder, 2009).



## RESULTS AND DISCUSSION

Studies that investigated the food quality attributes and other characteristics on consumer preferences include Hrnčířková (2006), Tolarová (2008), Palková (2009), Petranová (2010). The basic characteristics of selected studies are summarized in the Tab. II.

These studies differ in several respects, making comparisons across studies difficult. Mainly there is inconsistency in defining the concept of quality. While Hrnčířková (2006) and Tolarová (2008) studies examined quality in terms of sensory, health and process characteristics of food, Petranová (2010) differentiates sensory and health characteristics from attributes of convenience of their consumption, and Palková (2009) differentiates sensorial and process characteristics from attributes of origin of the food. Thus, different studies may have conveyed different notions of quality to the various survey respondents.

Empirical results in the Tab. III and IV show, that human health is one of the key benefit of the quality attributes of food products. Survey results indicated, that health dimension has become very important to consumers in the Czech Republic. Health and sensorial dimensions represents together generic weigh 0.60–0.80, and indicate, that consumers in the Czech Republic form preferences based on these dimensions motivated by expectations of both a longer and higher quality life.

In connection with this it is important to remind that Grossman (1972) applied above mentioned Lancaster's (1966) theory of consumer demand to develop a model of consumer demand for "good health". Grossman (1972) viewed human health as a commodity – durable capital stock – that produces an output of healthy time, and which depreciates with age. Thus, one determines one's optimal stock of health capital at any age by comparing the marginal efficiency of such capital with its user cost (in terms of the price of gross investment on improved health). Observed deterioration in human health over time therefore motivates an individual to protect oneself against such depreciation losses by purchasing various types of "insurance"

and/or holding an excess stock of health. An example of such "insurance" that a consumer may consider purchasing is functional food. The health characteristics of food may therefore be an input into the consumer's demand function for "good health", while the price of high quality and functional food becomes the cost of the investment in "good health". The above discussion suggests a possible link between food quality attributes and consumer demand healthy food.

All food quality dimensions are important since they contribute to the consumer's assessment of the quality of a certain food product. Empirical evidence shows, that often it is very hard for the consumer to decide (even in the pair comparison of attributes) about their relative importance, and they frequently indicate answers "Both food quality attributes are equally important" or "Very slight importance of one food quality attribute over the other". However it appears that experience characteristics such as taste, freshness and tradition together with the health aspects such are safety and functionality attributes are the most significant food quality attributes considered in analyzed studies. Survey results indicated, that health dimension has become very important to consumers in the Czech Republic. The AHP analysis suggests that the food quality attributes can be ranked in the order of importance. Empirical results are compared in the Tab. IV.

In general, the empirical evidence supports the hypothesis that health ensuring and enhancing characteristics together with sensorial characteristics significantly affect consumers' preferences for food; with the most important including safety, functionality, taste, smell and tradition. To overcome inconsistency in defining the food quality attributes in selected studies, the normalized specific weights of preferences for health attributes of food quality showed in the Table IV were summarized. The resulting aggregated normalized specific weighs ( $w'$ ) 0.45 (Hrnčířková, 2006), 0.35 (Tolarová, 2008), 0.44 (Petranová, 2010) 0.34 (Palková, 2009) of the total perceived quality, support the hypothesis of the high relative importance of health aspect of food. Functional food benefits may provide added value

II: Basic characteristics of selected food quality preference studies in the Czech Republic

Reference	Region (Population size)	Sample size	Focus of the study	Evaluated characteristics
Hrnčířková (2006)	Zlín (591 412)	186	Investigation of the relative importance of food quality dimensions and WTP for quality improvement	Sensorial Process Health
Tolarová (2008)	Plzeň (552 083)	175	Investigation of the relative importance of food quality dimensions and WTP for guaranteed quality	Sensorial Process Health
Petranová (2010)	Brno (557 514)	163	Investigation of the relative importance of functional attribute of food quality and WTP for functional food	Sensorial Health Convenience
Palková (2009)	South Moravia (1 140 534)	210	Investigation of the relative importance of food quality dimensions and WTP for guaranteed quality	Sensorial Origin Process

## III: Comparative analysis of key findings from selected AHP studies on consumers' perception of food quality attributes in the Czech Republic

Food quality dimensions	Generic weights $W$	Dimensions preference order	Food quality attributes	Specific weights $w$	Normalized specific weights $w'$	Attributes preference order
Hrnčíčková (2006)						
Sensorial	0.438	1	Taste	0.505	0.221	1
			Appearance	0.224	0.098	5
			Smell	0.271	0.119	4
Process	0.170	3	Organic	0.365	0.062	8
			Genetically modified	0.172	0.029	9
			Traditional	0.463	0.079	7
Health	0.392	2	High Energy	0.245	0.096	6
			Immunity supporting	0.366	0.143	3
			Low fat	0.389	0.153	2
Tolarová (2008)						
Sensorial	0.392	1	Taste	0.521	0.101	4
			Appearance	0.232	0.095	6
			Freshness	0.247	0.212	1
Process	0.359	2	Organic	0.341	0.124	3
			GM	0.225	0.082	8
			Traditional	0.434	0.158	2
Health	0.249	3	Safe	0.418	0.096	5
			Functional	0.279	0.063	9
			Low fat	0.303	0.069	7
Petranová (2010)						
Sensorial	0.402	2	Taste and smell	0.355	0.143	3
			Appearance	0.302	0.122	5
			Freshness	0.343	0.138	4
Health	0.447	1	Organic	0.211	0.092	6
			Safe	0.453	0.203	1
			Functional	0.336	0.15	2
Comfort	0.151	3	Packaging	0.223	0.034	9
			Durability	0.425	0.064	7
			Easy to cook	0.352	0.054	8
Palková (2009)						
Product	0.400	1	Sensorial	0.332	0.132	3
			Safe	0.412	0.165	1
			Comfort	0.256	0.101	7
Process	0.291	3	Organic	0.207	0.061	8
			Functional	0.378	0.113	6
			Conventional	0.415	0.123	4
Origin	0.301	2	Regional	0.375	0.117	5
			Domestic	0.456	0.137	2
			Foreign	0.169	0.051	9

to consumers but cannot outweigh the sensory properties of food.

In addition Petranová (2010) reported that health enhancement and health risk prevention through appropriate dietary choices are the most important motives for functional foods purchasing. From the 85 % of total sample of consumers that were willing

to buy and to pay premium for functional food, 32 % of respondents stated as the main motive the solution of health problems, and 53 % motive of the prevention of health problems. In addition, to define the most important functional food attributes that affect consumers' purchasing decisions, respondents were asked to score in points perceived

## IV: Comparative analysis of the relative importance of food quality attributes from AHP

Pref. order	Hrnčířková(2006)		Tolarová (2008)		Petranová (2010)		Palková (2009)	
	Attribute order	W'	Attribute order	W'	Attribute order	W'	Attribute order	W'
1	Taste	0.221	Freshness	0.212	Safe	0.203	Safe	0.165
2	Low fat	0.153	Traditional	0.158	Functional	0.150	Domestic	0.137
3	Immunity supporting	0.143	Organic	0.124	Taste and smell	0.143	Sensorial	0.132
4	Smell	0.119	Taste	0.101	Freshness	0.138	Conventional	0.123
5	Appearance	0.098	Safe	0.096	Appearance	0.122	Regional	0.117
6	High Energy	0.096	Appearance	0.095	Organic	0.092	Functional	0.113
7	Traditional	0.079	GM	0.082	Durability	0.064	Comfort	0.101
8	Organic	0.062	Low fat	0.069	Easy to cook	0.054	Organic	0.061
9	Genetically modified	0.029	Functional	0.063	Packaging	0.034	Foreign	0.051

## V: Comparative analysis of key findings from selected studies on consumer willingness-to-pay a price premium for the food quality

WTP characteristics	WTP for food quality improvement	WTP for guaranteed food quality		WTP for functional food
	Hrnčířková (2008)	Tolarová (2008)	Palková (2009)	Petranová (2010)
Share of respondents with WTP = 0	38.00%	29.70%	31.00%	14.70%
Share of respondents with WTP > 0	62.00%	70.30%	69.00%	85.30%
<b>Mean WTP</b>	<b>11.21%</b>	<b>15.37%</b>	<b>12.30%</b>	<b>15.58%</b>
Mean WTP > 0	18.08%	17.83%	17.83%	18.27%
Mode WTP (N)	0%	0%	0%	10%
<b>Mode WTP &gt; 0</b>	<b>10%</b>	<b>10%</b>	<b>20%</b>	<b>10%</b>
Standard deviation	15.30%	16.92%	10.96%	13.18%
Min WTP > 0	1.00%	5.00%	5.00%	5.00%
Max WTP > 0	80.00%	80.00%	40.00%	60.00%

importance of main health enhancing substances of the functional food. The resulting order showed the importance of health enhancing substances of functional foods as giving a score of minimum 6 on a 10-point scale. These results indicated Czech respondents' high level of reliance in health benefits of selected health enhancing substances with higher perceived importance of natural substances such as vitamins, fiber and minerals. More than half respondents generally believe in the health benefits of functional foods and 6% are convinced about it.

Secondary data analysis reported here was aimed to increase an understanding of the role of food quality attributes with the special attention to an evaluation of consumer preferences for health aspects of the food, and that is why the AHP based empirical studies were selected. However the price attribute is not included in the pair-wise comparison in the AHP technique, so it assesses the relative importance of non-monetary attributes preferences. In order to capture the value of improved food quality and health aspects to be used in the solution of the second research question, the term of value was interpreted as the price premium the consumer is willing to spend for improvements. The willingness to pay price premium was investigated using Contingent Valuation Method. The comparison of key findings from selected

studies, including statistic characteristics of the premiums consumers are willing to pay are summarized in Tab. V: for the guaranteed food quality (Tolarová, 2008; Palková, 2009), for the food quality improvement (Hrnčířková, 2006) and for the functional food (Petranová, 2010).

Empirical results indicate that most respondents (60–70%) stated willingness to pay a price premium for the guaranteed food quality and quality improvements and 85% of respondents stated WTP a price premium for functional food. Consumers are willing to pay an average price premium of 12% – 15% for the guaranteed food quality and of 11% for the quality improvement. A price premium 15% paid for the characteristics of functional foods suggests that consumers place a higher value on health enhancing attributes compared to conventional alternatives. In general, the proportion of respondents willing to pay a price premium decreases as premium increases, consistent with the law of demand. Most consumers are not willing to pay a price premium for the guaranteed quality higher than 10–20%. According to Zhifeng and Schroeder (2009) estimated WTP could be used as an input or proxy for demand change in welfare analyses of food policy and to provide useful information for food labeling programs.

## SUMMARY

The development of the competitive position of the Czech agri-food industry implies the necessity of managing the relationships between the businesses responsible for the efficient production and supply of food products from farm level to consumers, to reliably meet consumers' requirements in terms of food quantity, quality and price. This makes it necessary to have good knowledge about the market and consumer preferences and to come to quality control through the whole food supply chain.

Diverse methodologies have been developed to analyze consumer behavior related to food choice. Most of them assume quality as a multidimensional concept, i.e. quality is perceived by combining a number of quality dimensions or characteristics of product. To answer the first research question: *(1) How can product quality be measured from the consumer's perspective?* a methodology of Analytic Hierarchy Process was suggested and discussed as an promising tool for the researchers to deal with complexity in food quality preference measuring. In the AHP technique, food quality characteristics and attributes are evaluated in a direct pair-wise comparison within a structured hierarchy. One of the highlighted advantages of AHP method is that it can be used to assess the relative importance of non-monetary attributes preferences. Price attribute is not included in the comparison of the importance of food quality attributes. It is important for the producers to be able to capture consumer's expectations on the non-monetary attributes of food quality and to translate them into product specification and food labeling programs. However investigation of the purchasing decision and consumer willingness to pay for the guaranteed quality of food and food quality improvement is also important. WTP could be used as an input or proxy for demand change in welfare analyses of food policy and to provide useful information for food labeling programs. That is why the combination of AHP and CV (Contingent Valuation) methods was suggested and reviewed.

Drawing on the lessons learnt from the empirical work, the second research question: *(2) Are all dimensions of food quality of equal importance, or are some dimensions more important than others? How important are the health claims in relation to other attributes of the food quality?* was investigated. Empirical evidence shows, that often it is very hard for the consumer to decide even in the pair comparison of attributes about their relative importance, and they frequently indicate answers "Both food quality attributes are equally important" or "Very slight importance of one food quality attribute over the other". Health and sensorial dimensions represents together generic weigh 0.60–0.80, and indicate, that consumers in the Czech Republic form preferences based on these dimensions motivated by expectations of both a longer and higher quality life. Empirical results show that experience product characteristics – taste, freshness and tradition – together with credence health characteristics of food such as safety and functionality are the most significant quality dimensions of the food quality considered in analyzed studies. To overcome inconsistency in defining the food quality attributes in selected studies, the normalized specific weights of preferences for health attributes of food quality were summarized. The resulting aggregated normalized specific weighs ( $w'$ ) 0.45 (Hrnčířiková, 2006), 0.35 (Tolarová, 2008), 0.44 (Petranová, 2010) 0.34 (Palková, 2009) of the total perceived quality, support the hypothesis of the high relative importance of health aspects of food. Functional food benefits provide added value to consumers but cannot outweigh the sensory properties of foods.

*(3) What is the value of improving food quality and functional food development?* In general, the empirical evidence supports the hypothesis that health ensuring and enhancing characteristics together with sensorial characteristics significantly affect consumers' preferences for food and most consumers are willing to pay a price premium in order to ensure required quality of food. Consumers are willing to pay an average price premium of 12–15% (most frequently 10%) for the guaranteed food quality and of 11% for the quality improvement. A price premium 15% consumer are willing to pay for functional foods suggests that consumers place a higher value on health enhancing attributes compared to conventional alternatives. However because of the inconsistency in defining the concept of quality and in other characteristics of selected empirical studies, these results should be understand as an interesting lesson learnt from practical application and further empirical investigations are need to determine the relative influence of food quality characteristics.

## Acknowledgements

The paper is a partial output of a Research project of FBE MUAf Brno, (MSM No 6215648904) „Czech economy in the process of integration and globalization, and the development of agrarian sector and the service sector under the new conditions of an integrated market“ as a part of thematic direction 05 „Social-economic context of sustainable development of multifunctional agriculture, and actions of agrarian and regional policy“.



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