

## CONSUMER ACCEPTANCE OF FUNCTIONAL FOODS IN MONTENEGRO

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### Abstract

*This study aimed to investigate determinants of acceptance of functional food in Montenegro and to analyze to what extent these factors affected individuals' consumption of food with health claims. The questionnaire was administered to 479 respondents in Montenegro. The stratified three-stage random sampling method was adopted. Several statistical techniques were employed for investigating data: regression, cluster analysis, independent-samples t test and chi-square.*

*The results indicate that individuals' education, standard of the household and level of knowledge on products with health claims and perception of some products attributes affect the frequency of functional food consumption. Functional food consumers in Montenegro differ from their global counterparts relative to their age, gender, presence of children in household and appraisal of healthiness of functional food. It is recommended that companies should provide consumers with more information on functional food and attempt to diminish the relevance of price through other product's attributes. Since this paper presents the first national assessment of factors that influence functional food consumption in Montenegro it will be a valuable benchmark for future studies in the field.*

**Keywords:** functional food, Montenegro, cluster analysis, health claims, consumption.

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### 1. Introduction

In the last decades market and academic research have reported a raising awareness and interest of consumers in health matters and functional foods in general (Urala and Ldhteenmdki, 2004; Ares and Gambaro, 2007). Several factors could be acknowledged as influencing agents for this trend: recognition of the role of the food in the preservation of health (Krystallis et al, 2008), increase in life expectancy and increasing cost of healthcare (Menrad, 2003). Even though the lack of an official definition of the functional food complicate and limit to some extent monitoring of functional food markets, there are clear evidence that this market has been in the rise in the previous period and it is expected that this trend will continue in the future also. This market was estimated to be \$47.6 billion, whereas the United States were the largest market segment, followed by Europe and Japan (Sloan, 2002). It is projected that the market of functional food will exceed \$130 billion by the year of 2015 (Functional Foods and Drinks: A Global Strategic Business Report). The same report argued that developing regions would be the prime growth engines, especially highlighting East Europe, Asia-Pacific, Latin America and Middle East. This is in line with Sibbel's (2007) assertion that functional foods are commercially relevant in many countries globally.

In spite of this, it could be noted that there is a vast number of studies that tackled functional food market in developed countries (U.S. and EU mainly), while consumer behavior on this matter remained understudied in emerging markets (van Trijp and van der Lans, 2007; Verbeke et al., 2009; Dmitrovic et al., 2009). Several scholars (Frewer et al., 2003; Milosevic et al., 2012; Zezelj et al, 2012) called for attention in reference to this observation, emphasizing that consu-

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mer behavior related to functional food varied considerably cross-culturally, with regard to the diversity of specific socio-cultural environments. According to these authors European market is heterogeneous in terms of acceptance of functional food, appraisal of its characteristics and appreciation of different kinds of functional food and nutritive claims. Therefore, it can be concluded that it is necessary to conduct more research on this matter in developing countries and, thus help better understanding of functional food consumption patterns and market potentials in those regions. The research presented here aims to understanding of consumer acceptance of functional foods in emerging market based on a case study of Montenegro.

## 2. Literature review

One of the widely accepted definitions (Diplock et al., 1999) describes functional food as a food that “affects beneficially one or more target functions of the body, beyond adequate nutritional effects, in a way that is relevant to either an improved state of health and well-being and/or reduction of risk of disease”. In the simpler manner, it could be alleged that functional foods are those which can promote health and diminish the risk of illness (Christidis et al., 2011). Hence, European Union legislation (Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods) approves two types to be designated on the foodstuffs: nutrition claims and health claims (HC), whereas the latter are used, among others, to mark functional foods.

Elements that affect food choice, concerning the consumers, usually are: their socio-demographic characteristics and their attitudes and motivations to use functional foods. It can be argued that of numerous socio-demographic characteristics that have been examined in broad range of studies undertaken on the subject of functional food consumption, just few of them proved to be significant. Nevertheless, research consistently point out that socio-demographic features have certain power to explain differences in acceptability and intention to use functional food (Verbeke, 2005; Ares and Gambaro, 2007).

There is general consensus with respect to the gender of functional food's buyers – females demonstrate stronger purchase interest towards this kind of food (Childs, 1997; Poulsen, 1999). This outcome is quite salient, provided that females are persons who are responsible for food purchasing in the households. Moreover, functional food users in Europe are often more educated and of higher economic status (Hilliam, 1996; Anttolainen et al., 2001). However, in the domain of consumers' age there cannot be find such unanimity of opinions and findings. According to Poulsen (1999) and Urala (2005), elderly (older than 55 years) show more intention to buy functional food, which is adverse to the findings of Childs (1997). Another important socio-demographic attribute pertains to the presence of children in household (Xu and Wu, 2008; Verbeke et al., 2009). This finding may be explained in the way that families with children potentially have higher risk aversion, while also seek for fortification in their foods.

In the recent years, lifestyle factors appear to gain in the relevance for unfolding consumers' food selections. It is deemed that if person lives a healthy lifestyle, that will reflect to her/his food consumption (Villegas et al., 2008), while functional food can provide consumers with a modern way of leading a healthier life without changing their eating habits (Chen, 2011). Studies (Urala, 2005; Krystallis et al., 2008) consistently allege that one of the crucial motives for consumers to use functional food is the preservation of good health status and that one's health condition and the type of a product's health claim are highly correlated (van Kleef et al, 2005) with his/her acceptance of a certain functional food product. With regard to the HC, even though they are perceived to be useful (William, 2005), consumers are usually skeptical towards their trustworthiness (Verbeke et al., 2009). It should be noted, that knowledge of food and food ingredients contribute positively to the functional food consumption (Christidis et al., 2011) and that more informed (i.e. knowledgeable) consumers understand better (Grunert et al., 2011) benefits that they could gain from the balanced diet. Indeed, as Sun (2008) concluded, individuals' perception of their health status, their health concerns and nutritional knowledge would affect the formation of their healthy eating attitudes, and consequently, their habits related to functional food usage.

Furthermore, psychological factors determine to the very high extent what foods individual eats. Of these factors, the most prominent ones related to making food choice are: food preferences, food likes and dislikes and response to sensory attributes (Asp, 1999), which correspond to the attitudes. Attitudes can be defined “as a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour” (Urala and Ldhteenmdki, 2004). In other terms, “attitude is the sum of experiences and information about a product (cognition), which evokes positive or negative feelings towards it (affection) and drives the tendency to behave in a certain way (motivation to buy and eat it)” (Behrens et al., 2007).

With respect to the functional food consumers’ attitudes are mostly focused on the healthiness, taste, convenience of use (Gray et al., 2003; Urala and Ldhteenmdki, 2007) and price. It is generally considered and established that belief in the health benefits of functional foods determined positively acceptance of this kind of food (Verbeke, 2005). Nonetheless, the way in which HC are being presented have very low impact on perceived overall healthiness and consumer appeal (van Trijp and van der Lans, 2007), which is in line with consumers’ expressed skepticism towards HC. In addition, consumers are not willing to compromise taste for eventual health benefits (Gray et al., 2003; Ares et al., 2008), implying that sensory attributes are the essential in determining ultimate food choice. Correspondingly, certain findings (Asp, 1999) suggest that liked foods are those that are familiar and considered pleasant, while disliked foods are rejected either because they are perceived to be unpleasant or they have never been tasted. Concerning the perception of the price of the functional food, rather equivocal findings are encountered in the subject literature (Krystallis et al., 2008; Verbeke et al., 2009). One rational explanation could be the one proposed by Verbeke et al. (2009), citing that consumers may express the price argument in order to rationalize their reserves against functional foods, even though underlying reasons for this rejection is rather related to non-economic considerations.

Stemming from the subject literature and observed research gaps, this study aimed to explore determinants of acceptance of functional food in Montenegro and to analyze to what extent these factors affected individuals’ consumption of food with HC.

### **3. Research methodology**

#### **3.1 Participants and sampling**

The questionnaire was administered to 479 respondents in Montenegro, while stratified three-stage random sampling method was adopted, in order to ensure nationally representative samples. Primary sampling units were polling station territories, which encompassed about 200 households defined by street names. In the second stage specific households were chosen; and in the third phase sampling units were actual respondents. In order to optimize the sample plan and reduce sampling error, the stratification was done by region and type of settlement. The survey was undertaken in September 2010 and data collection was organized through face-to-face interviews at respondents’ homes. Respondents’ personal characteristics are provided in the Table 1.

#### **3.2 Instrument**

The questionnaire was developed in order to investigate broad range of research questions, regarding motives on food choice and consumption, attitudes, knowledge and social norms related to four product categories (fruit, traditional food, organic food and products with HC). In the last section of the survey, participant’s socio-demographic data were gathered. The questionnaire was developed in English, translated in local language and then back-translated to English. The comprehensibility of the questionnaire was investigated by pilot study that comprised 60 respondents.

Given the research subject of this paper, only relevant part of the questionnaire, which concerns products with HC, will be described. In the introductory part of the survey it was explained to the respondents what it was meant by the term “products with HC” and some examples were given. We considered this to be important since some previous studies (van Trijp and van der

Lans, 2007; Christidis et al., 2011) identified that consumers in various European countries often do not know the term of “functional food” or related concepts (e.g. health claims). The formulation in the questionnaire was as following: “Health claims that we see on product packages are claims that link a nutrient to a normal functioning of the body or a specific disease. An example of a health claim – *High in calcium, Calcium helps build strong bones. Adequate calcium throughout life, as part of well-balanced diet, may reduce risk of the osteoporosis*”. Some pictures with products with HC (e.g. probiotic yoghurts, milk enriched with vitamins) were provided also, ascertaining respondent’s better apprehension of this kind of the food.

Table 1: Statistical features of respondents

Variant	Sample population	Percentage
<b>Gender</b>		
Male	197	41.1
Female	282	58.9
<b>Age</b>		
18-30	183	38.2
31-50	161	33.6
51-65	103	21.5
66 or above	32	6.7
<b>Education</b>		
Unfinished elementary school	56	11.7
Finished elementary school	8	1.7
Finished secondary	315	65.8
College or university degree	100	20.9
<b>Standard of household</b>		
Bad	61	12.7
Moderate	256	53.4
Good	162	33.8
<b>Children in household</b>		
Yes	140	29.2
No	339	70.8
<b>State of health</b>		
Very bad	5	1.0
Bad	31	6.5
Moderate	119	24.8
Good	212	44.3
Very good	112	23.4
<b>Body Mass Index</b>		
Underweight (<18.4)	17	3.5
Normal (18.5 to 24.9)	281	58.7
Overweight (25 to 29.9)	149	31.1
Obese (>= 30)	32	6.7
<b>Level of information</b>		
Not informed at all	41	8.6

Very poorly informed	129	26.9
Moderately informed	249	52.0
Very well informed	51	10.6
Fully informed	9	1.9
HC on products labels are useful		
Agree	346	72.2
Disagree	133	27.8

Self-reported assessment was applied in responses to questions about: a) frequency of consumption, b) respondent's level of information on food with HC, c) whether participant perceives HC made on product labels to be useful, d) his/her state of health, e) standard of his/her household. For evaluation of frequency of consumption 10-points scale was used, including subsequent items: more than 2 times a day, twice a day, once a day, once in 2-3 days, once a week, 2-3 times a month, once a month, several times a year, once a year or less, never. Attitudes were measured by 7-point semantic differential scales, ranging from -3 to 3, including 0, which represented neutral score. Answer modalities for the other questions can be observed in the Table 1.

### 3.3 Data analysis

Several statistical techniques were employed for investigating data: regression, cluster analysis, independent-samples t test and chi-square. Multiple linear regression was run aiming to establish whether certain respondent's features affect his/her frequency of purchasing of products with HC. These results are accompanied with descriptive statistics, which should help better understanding of obtained data in regression analysis.

In the second phase of the examination, hierarchical cluster analysis was performed. Respondents were segmented into the clusters based on their attitudes towards food with HC (i.e., their expressed level of evaluation of the following food attributes – bad/good; unpleasant/pleasant; unhealthy/healthy; inconvenient for consumption/convenient for consumption; tasteless/tasty; cheap/expensive). Ward's aggregation method and Euclidian distances were applied.

Clusters profiling through identifying distinctive characteristics of each of the clusters was obtained by chi-square test and independent-samples t test. In the case of categorical variables (e.g., gender, presence of the children in the household, etc.) chi-square test at the significance level of 5% was performed, while in the case of metric variables (e.g., frequency of consumption of products with HC and respondent's knowledge about products with HC), independent-samples t test was considered to be suitable, again at the significance level of 5%. All statistical procedures were conducted using PASW Statistics 18 for Windows (SPSS Inc, Chicago, IL, 2009).

## 4. Results and discussion

In order to assess the influencing factors on the frequency of consumption of products with HC, a multiple linear regression was performed. The complete list of the variables included in the model is presented in the Table 2. Five kinds of explanatory factors are considered: socio-demographic (e.g., gender, age, education, etc.), physiological (overall state of health and body mass index), level of information (knowledge) of products with HC, skepticism of products with HC and attitudes towards the products with HC (e.g., whether respondents perceive this kind of products to be good, healthy, tasty, etc.). The regression model explained 30.7% of the variance of the experimental data.

The results of the regression analysis are reported in the Table 3. Among socio-demographic explanatory variables affecting consumer's frequency of consumption of products with HC, education and economic standard of the household had significant influence. Consumers with higher educational level and higher income would buy products with HC more often, which supports some previously published data (Hilliam, 1996; Verbeke, 2005).

Table 2: Descriptive statistics

Variable	Mean	Std. Deviation
How often they consume products with HC	4.81	2.198
Gender	1.59	0.493
Age	1.97	0.930
Education	2.96	0.832
Standard of the household	2.21	0.650
Children in household	0.29	0.455
Overall current state of health	3.82	0.898
BMI	3.41	0.669
Level of information	2.70	0.841
HC on product labels are useful	1.28	0.448
Bad/Good	2.05	1.208
Unpleasant/Pleasant	1.90	1.188
Unhealthy/Healthy	2.04	1.209
Inconvenient for consumption/Convenient for consumption	2.71	1.232
Tasteless/Tasty	1.81	1.253
Cheap /Expensive	2.08	1.261

Physiological factors, overall state of health and body mass index, have not proved to be statistically significant in predicting consumers' frequency of buying HC products. Reason for this can be found in the fact that respondents estimated their generic health status, not concentrating on some particular health issue that they could be concerned of, while some preceding studies denoted that functional food use was associated with specific health problems (Verbeke et al., 2009), and thus, specific functional food types, as well as with the care about calories intake (Sun, 2008).

As expected, respondents who considered being better informed about this kind of food and consumers who agreed with the statement that HC made on product labels were useful in helping her/him to decide which product to consume, tended to buy products with HC more often. These outcomes corroborate conclusions drawn by Grunert et al. (2011) and by Sun (2008).

Table 3: Regression results for frequency of consumption

Variable	Beta
Gender	0.051
Age	0.060
Education	-0.066*
Standard of the household	-0.079*
Children in household	0.037
Overall current state of health	0.047
BMI	-0.015

Level of information	-0.350***
HC on product labels are useful	0.088**
Bad/Good	-0.136**
Unpleasant/Pleasant	-0.060
Unhealthy/Healthy	0.011
Inconvenient for consumption/Convenient for consumption	-0.064
Tasteless/Tasty	-0.061
Cheap /Expensive	0.099**

Asterisks indicate that estimated coefficients are significant at \*10%, \*\*5% or \*\*\*1% level of confidence

Two out of six investigated attitudes toward the products with HC are found to have significant influence on frequency of consumption of HC products. Results show that higher consumers' perception of the goodness of product lead to more frequent consumption of that product. On the other hand, if a product is perceived to be more expensive, consumers are less likely to buy it.

Hierarchical cluster analysis was run in order to establish whether consumers with different attitudes towards functional food differ in their consumption patterns concerning that kind of food. This criterion for clusters segmentation is in line with previous studies stating that the beliefs and attitudes outweigh the impact of socio-demographic determinants on functional food acceptance (Verbeke, 2005; Christidis et al., 2011; Grunert et al., 2011). Two clusters are identified: Cluster 1, including 330 respondents and Cluster 2, composed of 149 participants. Statistically significant differences between these two clusters are found in all six cases, as reported in Table 4.

Table 4: Items of the attitudinal questionnaire and average scores for each of the two identified clusters

Attitude scale items (By your opinion products with HC are...)	Cluster 1 - HC Enthusiasts (n=330)		Cluster 2 - HC Opponents (n=149)		Cluster 1 x Cluster 2
	Mean	Std. Deviation	Mean	Std. Deviation	
Bad/Good	2.67	0.553	0.68	1.129	*
Unpleasant/Pleasant	2.48	0.711	0.63	1.036	*
Unhealthy/Healthy	2.70	0.534	0.59	1.007	*
Inconvenient for consumption/ Convenient for consumption	2.21	0.960	0.61	1.038	*
Tasteless/Tasty	2.36	0.826	0.57	1.152	*
Cheap /Expensive	2.27	1.175	1.66	1.345	*

Asterisks indicate that average scores for clusters 1 and 2 are significantly different at 5% level of confidence according to t test

The majority of respondents were classified in the Cluster 1 and they exhibited very positive attitudes towards the products with HC - therefore this cluster was named HC Enthusiasts. However, they perceived functional food to be quite expensive (M=2.27) in contrast to participants of the Cluster 2 (M=1.66). Opposite to them, the participants of the Cluster 2, named HC Opponents, showed rather unfavourable attitudes towards functional food, considering it to be not very pleasant (M=0.63), nor tasty (M=0.57).

In clusters profiling several factors were distinguished as significant, according to chi-square statistics – education, age (at 10% level of confidence), person's opinion on whether HC on product labels help product choice for consumption and respondent's level of information about food with HC. Unexpectedly, gender, presence of children in a household, standard of the household and respondent's state of health have not significantly affected the segmentation. The HC Enthusiasts are younger, more educated and consider HC to be valid influential factor when making their decision about product purchase. Adversely, HC Opponents were less educated, perceived HC to be unimportant and were older than their counterparts from Cluster 1. The significance of the enumerated factors in the differentiation of various segments of consumers of the functional food have been recognized in previous literature (Anttolainen et al., 2001; Xu and Wu, 2008; Verbeke et al., 2009).

Highly significant differences were found among clusters for the respondent's appraisal of the how much he/she was informed about products with HC and frequency of consumption of the functional food. Results of the independent samples t-test revealed that HC Opponents thought to be less informed about products with HC than the HC Enthusiasts, which is confirmed by descriptive statistics also ( $M_1=2.92$ ,  $M_2=2.23$ ; means are given respectively for Cluster 1 and Cluster 2). Moreover, both clusters significantly varied with regard to the frequency of consumption of products with HC. In this case, inspection of the clusters' means could be also useful, in terms that it exhibits that HC Enthusiasts buy functional food often ( $M=4.23$ , in 2-3 days, on the average), while HC Opponents do the same very rarely ( $M=6.09$ , 2-3 times a month). These findings suggest that consumers' attitudes towards food characteristics have impact on the frequency of consumption of functional foods, which is underpinned by prior subject research (Gray et al., 2003; Gruert et al., 2011).

## 5. Conclusions and limitations

This paper presents the first assessment of factors that influence functional food consumption in Montenegro. Provided that estimates indicate raising significance of Eastern European market of foods with HC, gaining an insight and better knowledge of local consumers on this matter is of the crucial importance. This study revealed manifold differences between Montenegrin consumers of functional foods and their global counterparts.

Several variables established as highly relevant in previous subject research failed to demonstrate their significance in determining differences in level of consumption of products with HC in our case. Above all, these variables pertain to gender, presence of children in household and perceived state of health. The majority of previous studies ascertained that these three factors highly affect individuals' consumption of products with HC, however our regression model did not confirm the same. In addition, perceived healthiness of food, taste, pleasure and convenience of consumption have not appeared to influence frequency of consumption, which is opposite to findings of some prior research (Urala and Ldhteenmdki, 2007; Villegas et al., 2008; Chen, 2011). It may be concluded that the goodness and price represent prevailing elements in determining how often food with HC would be used, which has already been confirmed to be true for foods in general.

Cluster analysis indicated that companies should put more efforts in informing consumers about functional food and HC. Provided that respondents of the Cluster 2 (HC Opponents) demonstrated unfavourable attitudes toward functional food, but on the other hand they expressed to be poorly informed about products with HC, marketers could consider providing more information on this matter to them in order to influence their more positive attitudes in the future. Individuals recognized as HC Enthusiasts should be more investigated in terms of lifestyle in order to achieve their effective marketing targeting, since they represent driving force and the most lucrative segment of Montenegrin functional foods market. Moreover, with regard to the fact that they are very sensitive to the price and perceive functional food to be expensive, companies should try to communicate better to which extent prices of products with HC differ comparing to prices of conventional products, and what kind of benefits they provide their consumers with for these premium prices.



Finally, some limitations should be mentioned also. Firstly, self-reported measures as the indicators of consumption frequency and level of information on products with HC were applied, which could lead to somewhat inaccurate assessments. Secondly, since face-to-face interviews were conducted, that might imply sensitivity to socially desirable answers. In order to improve further studies in this field, utilization of diary method could be more reliable in investigating consumption and level of knowledge on functional food.

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