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PERCEPTION OF FUNCTIONAL FOOD AMONG CROATIAN CONSUMERS

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Abstract

Nutrition's significance lies at the very core of human existence - from fostering good health and upholding individual well-being to indulging in the pleasures of food, its importance is undeniable. Reviewing the scientific literature, diverse definitions of functional food try to define its meaning precisely. The food is labeled "functional" when it fulfills basic nutritional needs and positively influences health, diminishing the risk of specific diseases and enhancing overall vitality. Considering that food expenses constitute a substantial portion of household budgets, a significant economic dimension exists when planning an individual's diet. The assortment of functional foods is constantly evolving, prompting modern consumers to analyze their dietary choices more rigorously than ever before. This surge in interest has evoked the attention of researchers, manufacturers, and consumers. However, a comprehensive analysis of Croatia's consumer behavior and functional foods must still be available. The present study builds upon the theory of planned behavior, a framework well-fitted for social research and exceptionally skilled at investigating the multiple factors pointing to consumer decisions. Drawing insights from empirical research conducted in Croatia, a robust correlation was established through linear regression between attitudes, subjective norms, concern for personal health, and the intent to purchase functional foods.

Keywords: consumer behavior, consumer perception, consumer attitudes, functional food, theory of planned behavior

1 Introduction

Historically speaking, concerns about proper nutrition are relatively recent in human history. With scientific advancements, the significance of maintaining health through good nutrition has grown significantly. Food's importance is deeply embedded in the existence of the human race. It goes beyond mere health and well-being; there's an equally vital hedonic aspect. The cardinal rule of nutrition is that food should supply essential nutrients for the body's normal functioning. However, it must not sacrifice its other attributes, such as aroma, taste, appearance, and other characteristics consumers value. Food expenses comprise a substantial portion of household budgets (Mjeda et al., 2020), so there's a vital economic component to consider when formulating dietary plans. The concept of functional food, a relatively recent emergence from the late 20th century, bridges the gap between healthcare and individual nutrition. Numerous definitions in scientific literature aim to define functional food precisely. Besides its essential nutritional value, food positively impacts personal health by lowering disease risks and enhancing overall well-being. The available food market is swiftly evolving, driven by contemporary consumers who are more conscious of their dietary choices than ever before. This surge in interest has captured the attention of scientists, manufacturers, and consumers alike, creating a global market for functional foods.

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However, research on consumer behavior towards available food in Croatia is relatively limited. Some research findings suggest that Croatian consumers need more education and awareness about functional food products and their health benefits. This gap motivated this study to provide deeper insights into consumer behavior within the available food segment. The study employs the theory of planned behavior, a well-suited framework for social research, and is particularly adept at analyzing the influence of various factors on consumer behavior. This paper aims to identify factors influencing Croatian consumers' consumption of functional food, which enhances knowledge about the food's significance and the growing emphasis on individual health preservation in the global context.

2 Previous research

As mentioned earlier, the concern for proper nutrition emerged relatively recently in the timeline of human history. With the advancement of scientific understanding, awareness regarding the significance of proper nutrition has gradually been disseminated. In the 20th century, pivotal nutrients were identified, leading to the establishment of nutrient standards, dietary guidelines, and food guides. These initiatives were undertaken to prevent nutrient deficiencies while fostering the growth, maintenance, and overall development of the human body (Gibson & Williams, 2000). While contemporary society places significant emphasis on food, the fundamental principle remains that it should foremost serve its essential purpose: providing the necessary nutrients to meet daily requirements (Kralik et al., 2015). However, in today's world, individuals desire more than mere sustenance; they seek culinary experiences encompassing sensory pleasures such as taste, aroma, and appearance. The beginning of the 21st century faced humanity with new challenges - with escalating healthcare costs, increased life expectancy, and rapid technological advancements, the realm of nutritional science has had to adapt. In this environment, nutritionism focuses on offering individuals an optimal dietary regimen that maximizes physiological functions, provides substantial health benefits, and minimizes the risk of disease over a lifetime (Gibson & Williams, 2000). This pursuit has prompted intensive research into food products that positively influence health and mitigate potential adverse effects on well-being. This chapter aims to trace the evolution of functional food products, analyze their definition, specify various groups, provide examples of functional foods, and study the understanding of the available food product market and its consumers. It has been observed that different foods or food components can be beneficial for human health and well-being (Sharanya Rani & Penchalaraju, 2016). In the 1980s, Japanese scientists conducted pioneering research on functional food products. The culmination of their efforts constructed the term "Foods for Specified Health Use" (OSHU), designating food that positively impacts health. The European Commission followed suit a decade later, laying the scientific groundwork for functional nutrition. These steps led to the establishment of Functional Food Science in Europe (FUFOSE), a pivotal framework that has since served as the bedrock for the comprehensive study of functional foods and scientific exploration in this field (Krešić, 2012). Many definitions try to precisely define the term available food - it is considered that "food can be called "functional" if, in addition to its basic nutritional value, it positively and satisfactorily affects one or more targeted functions of the body, reducing the risks of developing certain diseases" (Friganović et al., 2011). Functional nutrition has existed for less than fifty years, but today, it is very significant, and scientists are very active in researching this form of food products. The primary role of functional food in the framework of proper nutrition is to reduce the risk of degenerative diseases, improve physical and mental performance, and contribute to the health and well-being of the organism (Krešić, 2012). Functional foods have health benefits that exceed the usual supply of necessary essential substances (such as vitamins and minerals) if consumed regularly. Although different foods have characteristics that make them functional food products, some foods do not have such characteristics, so scientists are working on their development to turn them into functional foods (Sharanya Rani & Penchalaraju, 2016). The market for available food products is increasingly developed, and consumers today are much more inclined to think about what they eat than in the past. This is why functional food products have increasingly attracted scientists, manufacturers, and consumers.

2.1. Functional food consumption

Although functional foods can be found in markets worldwide, the consumption of such foods depends on the consumers' preferences. Essentially, which food can be called available food? For example, fruits, vegetables, and spices form an essential group of functional food products. Most of the foods in this group contain phenolic compounds that have an antioxidant effect. Antioxidants can positively impact conditions such as degenerative diseases and immune disorders. Examples of fruits that contain a lot of phenols and, therefore, have a strong antioxidant effect are apples, blueberries, cherries, grapes, grapefruit, and others (Siswanto, 2014). In Croatian culture, it is a well-known fact that when you have a cold or a mild illness, it is good to consume a little honey, lemon, and tea; the consumption of fruits and vegetables is helpful for the flu, and garlic is good for the treatment

of fungi, but also helps to protect against diseases. Although functional nutrition is very young, fruits and vegetables have been used as available food since the ancient past. In the non-alcoholic drinks category, you can expect to find juices with vitamins or additives of other ingredients. Chewing gum that improves dental hygiene is very common. When analyzing the dairy market, omega-3 milk or yogurt is found in almost every supermarket, and cereals eaten for breakfast may contain ingredients that help lower cholesterol (Sharanya Rani & Penchalaraju, 2016). Different types of food products are characterized by other enrichment processes with nutritious and nutritionally valuable substances. Food products can be found in almost all food categories.

In general, the consumers' food decision process depends on various factors. According to some authors, factors influencing food selection could be divided into five groups – cultural, sensory, cognitive, health status, and genetic factors, all with their subgroups (Alibabić & Mujić, 2016).

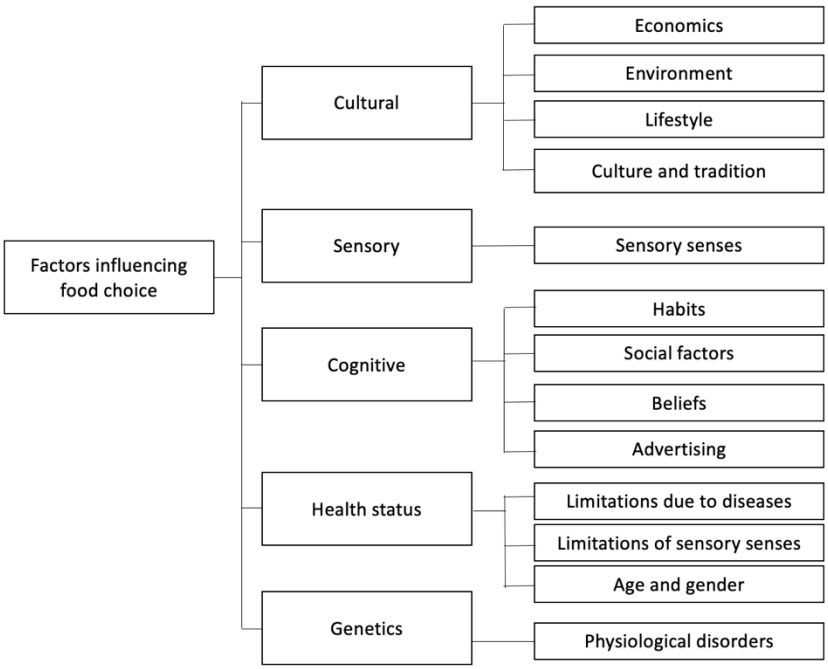


Fig. 1 Factors influencing food selection, source: adjusted according to Alibabić, V., Mujić, I. (2016), Pravilna prehrana i zdravlje, Veleučilište u Rijeci, Rijeka, str. 16.

The cultural factors influencing food choice are economy, environment, lifestyle, culture, and tradition. The economic factor is related to the standard of living, so the choice of food is influenced by food availability, price, family situation, purchasing power, and other factors of an economic nature. The state of the environment, which today is heavily polluted, influences the emergence of new trends, for example, ecological and organic agriculture (Alibabić & Mujić, 2016). The influence of culture and tradition on food choice is logical since certain cultures do not approve of consuming certain food products. Sensory factors are essential because a person receives information about the food he eats through his senses, so he decides on the desired taste, smell, texture, and color of the food. The first food preferences in humans develop before birth and can change during different periods of life. Cognitive factors consist of a set of influences such as habits, beliefs, the influence of advertising, and social factors. Habits about choosing food or how to prepare food are most often passed on in the family; this is also related to social factors because food and nutrition are first learned within the primary family environment (Alibabić & Mujić, 2016). Health status and genetics influence the choice of food and are included in the group of physiological factors. The health status of the organism, age, gender, and genetics have the most significant influence on food choice, and physical and mental disorders are also linked to food choice. When Related to functional food, different other influences impact buying decisions, such as (Krešić, 2012):

a) Prices of functional food products
b) Properties of functional food products
c) Personal characteristics of individual consumers
d) The impact that the environment has on the consumer at the time of purchase
e) Communication that connects all other mentioned factors.

However, in order for the consumer to even decide to buy functional food products, he must accept and understand the concept of this form of nutrition (Krešić, 2012). Numerous studies show that Croatian consumers are not sufficiently familiar with the idea and benefits of functional food products (Kralik & Rebekić, 2018). According to the results of this research, Croatian consumers are insufficiently educated and informed about the concept of functional food products and the health benefits of these products. Furthermore, Banjari et al. (2020) proved that Croatian consumers' awareness of available food products and their role in human nutrition is deficient; that is, their knowledge about available food products is scarce. They suggest manufacturers implement a specifically targeted consumer information strategy based on scientific knowledge (Banjari et al., 2020). Research on consumer attitudes toward functional food is increasingly prevalent in world literature. However, research on Croatian consumer attitudes is scarce.

We find that young Croatian consumers have an increasing awareness of functional food. Still, it is necessary to increase consumer trust in such products and improve understanding of labels, i.e., product claims (Gajdoš Kljusurić & Čačić, 2014). The research carried out through a longitudinal study on the example of six countries of the Western Balkans was aimed at analyzing consumer attitudes towards functional products and finds that the main motivational factor is the importance that consumers attach to the health benefits of food, that is key to predicting their attitudes towards functional food, which is in line with the findings of another author (Žeželj et al. 2012). Functional foods have not yet been on the market long enough to be considered mainstream or consumed by all consumers. Since modern consumers have a wide range of food products at their disposal, functional food products, despite their benefits on human health, must meet specific criteria to be attractive to consumers.

3 Empirical research

It was already indicated that the process of making a purchase decision is a complex system influenced by a range of different factors, such as personal, social, and psychological factors. At the same time, some authors often single out situational factors as well. Considering the importance of nutrition for an individual and the fact that food is one of the most basic human needs, consumers are often inclined to pay a higher price if they believe that a product brings them additional utility. One of the backbones of prevention in health and the basis of individual care is functional food, a segment of nutrition that has seen a significant increase worldwide since its appearance in the 80s of the last century. Available food, which was therefore created to reduce the risk of specific diseases such as heart and circulatory system diseases, osteoporosis, and others, is now widely represented on the shelves of Croatian stores. Bearing in mind that the awareness of health preservation and the influence of nutrition on one's well-being are inevitably connected, this work focuses on the analysis of consumer behavior in purchasing and consuming functional products. The research was carried out by collecting primary data with survey research. The data was collected in June 2022 using a questionnaire on a sample of 154 respondents. A five-degree Likert scale was used to assess consumer attitudes, according to which the respondents had the opportunity to determine their agreement with the statement.

3.1. Research model

The research model in this paper is built on the theory of planned behavior (Ajzen, 1991), which is well-suited for research in social behavior. According to this theory, human behavior is guided by three dimensions: beliefs about the probable consequences of behavior (behavioral beliefs), beliefs about the normative expectations of others (normative beliefs), and beliefs about the existence of factors that could influence the performance of a particular behavior (control beliefs) (Ajzen, 1991). Fishbein & Ajzen (2010) suggest compiling a 7-level bipolar scale of statements (adjectives) that adapts to the research topic and includes direct measurement of attitudes, subjective norms, perceptions of behavioral control, intentions, and actual behavior. Using multiple regression and structural equation analysis, the relative contribution of attitudes, norms, perceptions, and intentions can be determined and used to predict behavior. Ajzen's model of the theory of planned behavior has been applied in numerous works in its primary or extended form for the analysis of consumer behavior toward functional products (Ajzen, 2015; Salmani et al., 2020; Bakti et al., 2020; Nystrand & Olsen, 2020; Lim & Soyoung 2021). In the behavior of Croatian consumers, this model has been applied, for example, to analyze the influence of factors on the intention to buy organic food (Martić Kuran & Mihić, 2014) or the intention to purchase and consume fresh fish (Tomić & Matulić, 2014).

In this research, in addition to the previously mentioned variables, we expanded the model with the variable of concern about the individual's health, assuming that this variable will significantly influence the intention to purchase functional food. The variables of this research are based on a literature review and the previously mentioned theoretical definitions. The model is presented in the following diagram:

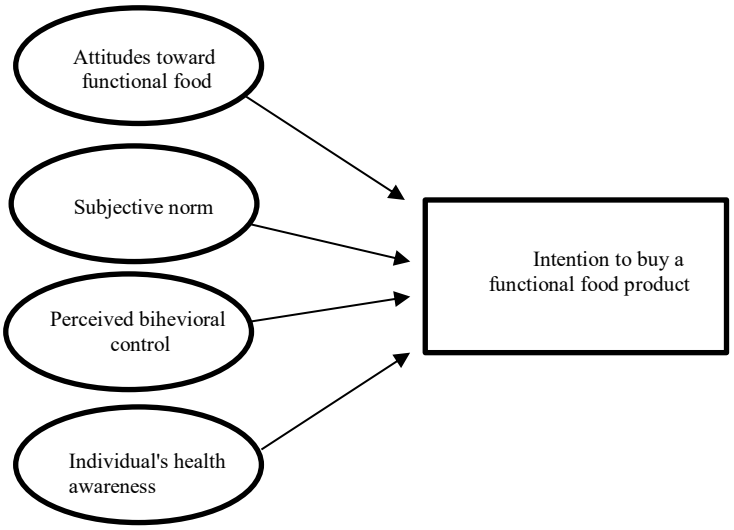


Fig. 2 A research model of functional food consumer behavior, source: authors' research, adapted according to Ajzen 1991.

The variables that make up the model were analyzed using 22 statements – a couple of them were acquired from the previously mentioned literature that dealt with the research of the theory of planned behavior and were adapted for the needs of this research (Martić Kuran & Mihić, 2014; Tomić & Matulić, 2014), while other statements were developed independently.

Table 1. Survey on the research of consumer preferences towards functional food products by author

Claim	N	Min	Max	Average	Standard deviation
1. Attitudes					
Eating functional food is healthy.	154	1	5	3,92	0,901171
I like to eat functional food.	154	1	5	3,88	0,925456
Functional food tastes better than traditional food.	154	1	5	2,99	1,012820
I feel good after consuming functional food.	154	1	5	3,69	0,942006
Consumption of functional food reduces the risk of disease.	154	1	5	3,40	1,016229
Eating functional food has a positive impact on my health.	154	1	5	3,62	0,927208
2. Subjective norm					
My family members encourage me to eat functional foods.	154	1	5	3,09	1,229315
The food industry encourages me to eat functional food.	154	1	5	3,34	1,136067
Doctors and nutritionists encourage me to eat functional food.	154	1	5	3,03	1,150652
The media encourages me to eat functional foods.	154	1	5	3,40	1,181122
My friends encourage me to eat functional food.	154	1	5	2,85	1,144056
Members of my family regularly consume functional foods.	154	1	5	3,13	1,091296

My friends regularly consume functional foods.	154	1	5	2,98	0,936079
3. Perceived behavioral control					
Functional food is of better quality because it is more expensive than traditional food.	154	1	5	2,42	1,183120
Functional food is better for my health because it is more expensive than traditional food.	154	1	5	2,16	1,101774
When I buy functional food, I never know if I made the right choice.	154	1	5	3,01	0,996727
4. Health awareness					
It is important for me to eat a variety of food.	154	1	5	4,53	0,685642
A healthy diet is important to me.	154	1	5	4,42	0,709696
I am very concerned about my health and the health of my family.	154	1	5	4,03	0,759518
Intention to buy functional food					
I intend to eat functional food in the next month.	154	1	5	3,58	1,054990
I have a great desire to eat functional food.	154	1	5	3,31	1,053870
I will probably be eating functional foods in the next month.	154	1	5	3,66	1,076435

The Cronbach alpha coefficient was applied to assess the reliability of the measurement scales. The values of independent and dependent variables were obtained by averaging the statements that refer to these variables. Correlation analysis was conducted to examine the presence of multicollinearity among variables, and regression analysis will explore the relationship between the analyzed variables.

The estimation of the econometric model was based on the general linear regression model:

$$y_i = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + e_i$$

Where y_i is the dependent variable, the intention to buy functional products, x(1-4) are four constructs that comprise the model's independent variables: attitudes, subjective norm, perceived behavioral control, and health care. The validity and reliability of the questionnaire were tested using the Cronbach alpha coefficient. The lowest acceptable value of this coefficient is 0.6, while values of 0.7-0.9 are considered very good or excellent (DeVellis, 1991).

Two claims regarding the attitudes regarding the functional food products were excluded from the analysis since they reduce the reliability scale (Cronbach alpha coefficient was more significant than 0,9, so it is advisable to shorten the scales). Thus, the reliability of the measuring scale "Attitudes towards functional food" is 0.8998, considered excellent reliability. The values of all other Cronbach alpha coefficients show that the reliability of the applied measurement scales is above the acceptable limit – "subjective norm" (0,8165), "perceived behavioral control" (0,6167), and "individual's health awareness" (0,7197). This paper does not present the whole set of statements but is available to other colleagues upon request. Furthermore, multicollinearity between independent variables was examined in two ways - using correlation analysis and the variance inflation factor (VIF), i.e., tolerance (1/VIF). Both indicators point to the absence of multicollinearity among the independent variables, which relates to the good reliability of the regression model (Šošić, 2004). Multiple linear regression was used to model the linear relationship between the beforementioned explanatory (independent) variables and response (dependent) variable, results are presented in the next table:

Table 2. Regression analysis results

Response variable: Intention to buy a functional food product				
	Coefficient	t-value	p-value	R = 0,5326
Constant	-1,2190**	-2,731	0,0071	R^2 = 0,5201
Attitudes toward functional food	0,5360***	6,718	0,0000	F = 42,45***
Subjective norm	0,1923*	0,0864	0,0275	
Perceived behavioral control	0,1215	1,588	0,1144	
Individual's health awareness	0,4323***	4,356	0,0000	

The regression analysis indicates that a model is statistically significant at the reliability level of $p < 0.01$. The values of the standardized beta coefficients, the t-value, and the corresponding p-value suggest that the attitude of respondents towards functional products ($\beta = 0.536$) and health concern ($\beta = 0.432$) contribute the most to the intention to consume applicable products followed by the subjective norm ($\beta = 0.192$). The coefficient of perceived behavioral control is not statistically significant. Therefore, it does not significantly contribute to explaining the intention to consume functional products.

4 Conclusion

Although there is no clear definition of how to maintain a healthy lifestyle or what food we should consume to remain healthy, it is evident that functional food is an emerging market whether we like it or not. It is even more critical since nutrition's significance lies at the core of human existence, and food expenses are one of the most significant individual household expenses. Although functional food is relatively new, valuable products have occupied a large part of the market. Therefore, their importance should be addressed.

Research into functional food from the consumer behavior aspect in Croatia is relatively scarce, so it was the impetus for creating this research. The research relies on the theory of planned behavior, which is considered particularly suitable for analyzing the influence of various factors on consumer behavior. The basic model, which includes research into the impact of attitudes, subjective norms, and perceived behavioral control of respondents on the intention to purchase functional products, is expanded by the individual's health awareness. The variables that make up the model were analyzed using 22 statements - some were taken from the previously mentioned literature and adapted for the needs of this research, while some statements were developed independently. The Cronbach alpha coefficient was used to assess the reliability of the applied measurement scales. The values of independent and dependent variables were obtained by averaging the statements that refer to these variables. Correlation analysis examined the presence of multicollinearity among variables, and regression analysis determined the connection between the analysed variables. Empirical research conducted on a convenient sample of 154 respondents was linearly approximated by the least squares method, which established a significant influence of attitudes, subjective norms, and concern for the individual's health on the intention to purchase functional food. No statistically significant relationship was found between perceived behavioral control and the intention to purchase available products. This study aims to provide a deeper understanding of the factors influencing Croatian consumers' behavioral intention toward choosing healthy food products, such as functional foods, and administer guidance to all interested parties in combating health issues. For example, family doctors should provide more information and guidance on how to gain or maintain health by choosing the right food, or food manufacturers in Croatia could also gain a better understanding of the key factors that influence their consumers' behavioral intention in choosing functional food products.

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