Economia agro-alimentare /
Food Economy

An International Journal on Agricultural and Food Systems

Vol. 27, Iss. 1, Art. 4, pp. 1-55 - ISSNe 1972-4802
DOI: 10.3280/ecag2025oa18685

Understanding consumers' willingness to use omega-3 enriched eggs

Marina Tomić Maksan[*,a], Željka Mesić[a], Branka Šakić Bobić[a], Damir Kovačić[a], Andreas C. Drichoutis[b]

[a] University of Zagreb, Croatia
[b] Agricultural University of Athens, Greece

Abstract

One of the most important consumer trends in the food sector is the increasing popularity of nutritionally enriched food product consumption, especially omega-3 enriched foods. This study examines the consumers' willingness to consume omega-3 enriched eggs and applies the Health Belief Model (hereinafter: HBM). An online survey was conducted on a representative sample of 524 Croatian consumers who do grocery shopping for their households and purchase eggs. The data was collected from a representative panel using quota sampling by gender and age and analyzed using SEM by Partial Least Square. The results show that almost 3/4 of the respondents do not know what omega-3 enriched eggs are. The perceived benefits, self-efficacy, cue to action and health motivation have a positive impact on the willingness to use omega-3 enriched eggs. Contrarily, the effects of threat perception variables (perceived severity and perceived susceptibility) and barriers on the willingness to use omega-3 enriched eggs are not significant. The results could support the efforts of the producers and the authorities to develop strategies that promote the consumption of omega-3 enriched foods, especially eggs.

Article info

Type:
Article
Submitted:
14/10/2024
Accepted:
14/03/2025
Available online:
15/04/2025

JEL codes:
Q13, M31

Keywords:
Functional foods
Omega-3 enriched eggs
Consumers
Health belief model

Managing Editor:
Valeria Borsellino

* *Corresponding author*: Marina Tomić Maksan - University of Zagreb, Faculty of Agriculture. E-mail: matomic@agr.hr.

Introduction

Eggs are an affordable and widely available food worldwide (Lesnierowski & Stangierski, 2018). Their quality is significantly influenced by the animal feed (Sharma *et al.*, 2020). In order to improve the nutritional value of eggs, the producers need to modify the hens' feed by adding fish and/or flaxseed oil and flaxseed (Kassis *et al.*, 2010). This has led to the development of omega-3 fatty acid-enriched eggs, a functional food that boosts the intake of essential nutrients – particularly omega-3 fatty acids often scarce in the modern Western diet (Fraeye *et al.*, 2012). Omega-3 fatty acids are known for their health benefits, including the protection of the cardiovascular system, supporting cognitive abilities, reducing inflammation, maintaining muscle and improving insulin resistance (Yashodhara *et al.*, 2009; Mozaffarian & Wu, 2011; Pistollato *et al.*, 2018). As confirmed by previous research, the acceptance of functional foods largely depends on the perceived link between nutrition and health (Vecchio *et al.*, 2016; Baker *et al.*, 2022), with particular stress on health benefits as their strongest driver (Verbeke, 2005). The growing health awareness has further fueled the demand and made functional foods a major trend in the food industry (Baker *et al.*, 2022).

Despite the growing demand for functional foods, the empirical research on consumer acceptance and willingness to use certain products such as omega-3 fatty acid-enriched eggs is still limited – especially in the lower income EU countries. The existing studies (e.g. Mesías *et al.*, 2011; Palmieri *et al.*, 2022), conducted mainly in higher income countries, focus on identifying the factors that influence willingness to pay (WTP) and consumer preferences for functional eggs compared to organic or conventional eggs. However, a comprehensive analysis of the psychological predictors influencing consumers' willingness to use omega-3 enriched eggs is scarce, especially in economically constrained EU markets such as Croatia's, where both the supply and the demand for such products are still emerging.

To address this gap, this study applies the Health Belief Model (HBM), which takes into account important psychological determinants like perceived barriers, perceived benefits, self-efficacy, perceived susceptibility, perceived severity, cue to action, and health motivation (Rosenstock, 1974). This study aims to test the HBM and identify the key psychological predictors of consumers' willingness to use omega-3 enriched eggs. In addition, the model will be examined in a lower income EU market where economic constraints may further influence consumer behavior.

Understanding these psychological predictors can help policy makers, producers and marketers develop more effective strategies to promote functional foods, address consumer concerns, and increase their uptake in price-sensitive markets. In particular, these findings can support targeted

marketing strategies, public health initiatives and policy recommendations to improve the uptake of functional foods. Additionally, identifying the strongest predictors of consumers' willingness to use omega-3 enriched eggs can help producers refine their messaging, optimize pricing strategies and develop more effective educational campaigns to increase awareness and confidence in functional foods.

1. Background

1.1. *Functional food studies*

Martirosyan *et al.* (2021) define functional foods as (1) manufactured foods to which bioactive compounds have been added during processing, (2) foods that naturally contain bioactive compounds, and (3) modified foods that have been altered to have more bioactive compounds. Studies by Wang *et al.* (2022) have identified new sources of bioactive molecules for the development of functional foods. Namely, algae contain large amounts of proteins also rich in essential amino acids, unsaturated fatty acids, and vitamins. They can be added as a functional ingredient in meat and meat-based products to obtain healthier foods.

People are more willing to consume functional beverages if they feel they can reduce the risk of contracting diseases, especially after a pandemic (Natarajan *et al.*, 2024). The research findings of Fasakin and von Massow (2024) show a general consumer interest in immune-boosting dairy products and that the presence of children under the age of fifteen in households is an important factor in increasing consumer receptivity to these products. According to previous studies, several key factors influence consumers' decisions to consume functional foods in an emerging market economy (Nguyen *et al.*, 2019).

One of the most important factors for the acceptance of functional foods is the various perceived barriers (Ozen *et al.*, 2012; Ozen *et al.*, 2014). Embling *et al.* (2024) investigated consumer beliefs regarding fortified (functional) foods, and found that taste and texture generally ranked first, and that a positive perception of health benefits increased the consumers' willingness to purchase them, while both cost and uncertainty about using the product were potential barriers. Additionally, price seems to be a major barrier to the consumption of functional foods. Thus, Ares *et al.* (2010) found that price negatively influenced the consumption of functional yogurts. Other barriers to the consumption of functional foods include convenience, lack of knowledge about the appropriate amounts to consume and preparation methods (Moutinho *et al.*, 2022). Nystrand and Olsen (2020) concluded

that functional foods were not widely available in the Norwegian market. Therefore, low availability may also pose a barrier to the consumption of functional foods.

There are other factors that positively impact people's willingness to use functional foods – namely, the perceived benefits such as improved health, enhanced well-being, improved functioning of physiological processes, interest in healthy diets, and beliefs about the properties of functional foods (Siegrist *et al.*, 2008; Siegrist *et al.*, 2015; Pappalardo and Lusk, 2016; Bimbo *et al.*, 2017). The findings of Osunsanmi *et al.* (2024) show the importance of understanding consumer motivations and attitudes to enable food producers to implement the best marketing strategy to increase sales, and to enable dietitians and health professionals to share information creating more awareness of the health benefits of consuming functional foods. Siegrist *et al.* (2015) showed that people with stronger interest in health were more willing to purchase functional foods than people with lower health motivation. In addition, Bimbo *et al.* (2017) found that the acceptance of functional dairy products is more pronounced among the consumers with high overall interest in health. In Italy, health-conscious shoppers are more likely to buy eggs rich in omega-3 fatty acids than other consumer segments (Yeh *et al.*, 2020).

Rezai *et al.* (2017) give several examples of cues for action, including a family member's illness, parental advice, recommendations from elders and close friends, as well as the influence of doctors and experts as well as health campaigns – all of whom are likely to motivate or coerce consumers into purchasing functional foods. Febian and Annuar (2021) found no direct effect of cue to action on intention to consume functional foods.

Conroy *et al.* (2021) seek to understand how functional foods and well-being intersect and find that perception of the severity of health problems could also influence consumers' decisions regarding the functional foods they consume for disease prevention. Kim *et al.* (2012) found that perceived severity had a significant positive impact on behavioral intention to consume healthy foods among college students. However, Vassallo *et al.* (2009) stated that perceived severity was not a significant predictor of willingness to eat functional bread.

Some previous studies indicate that consumers are generally willing to pay more for products with superfluous claims. In their study, Nagy *et al.* (2024) indicated that both younger and older consumers were willing to pay higher prices for organic and functional redundantly claimed apple juices. The perceived health was a significant factor to increase preferences for all value-added products among the younger participants, but with the older participants it only influenced their preferences for organic and functional apple juice. The perceived susceptibility had no significant effect on consumers' intention to accept synthetic functional foods according to

Rezai *et al.* (2017). Previous studies have shown that self-efficacy is a strong predictor of health intention (Terry and O'Leary, 1995; Rodgers *et al.*, 2008) and dietary behavior (Armitage and Conner, 1999; Povey *et al.*, 2000). Nystrand and Olsen (2020) found that the motivation to consume functional foods depends largely on the consumers' confidence in their ability to do so. Other studies (Park *et al.*, 2011; Salleh *et al.*, 2016) have concluded that self-efficacy positively influences the Malaysian consumers to consume functional foods. Additionally, the study by Krutulyte *et al.* (2011) showed that self-efficacy played a major role in the selection of omega-3/fish oil-fortified foods.

1.2. *Heath belief model*

The HBM was developed in the early 1950s by a group of social psychologists from the U.S. Public Health Service to understand the widespread rejection of preventive measures or screening tests for the early detection of asymptomatic diseases (Rosenstock, 1974). Since then, the HBM has been widely used in health behavior research as a conceptual framework both to explain the change and maintenance of health-related behaviors and as a guiding framework for health behavior interventions (Abraham and Sheeran, 2005). The model is based on an individual's motivation to perform a particular behavior, and its main strength is the use of simplified health-related constructs that allow for ease of implementation, application and testing (Conner, 2010). Some of the limitations of the HBM are the lack of explicitly stated relationships among the variables, the absence of clear rules for combining the formulated variables (Armitage and Conner, 2000; Abraham and Sheeran, 2005), and their low predictive ability (Orji *et al.*, 2012). The HBM contains several key concepts that anticipate the likelihood of individuals to take preventive, screening or control measures against the diseases which are related to the (perceived) susceptibility, severity, benefits and barriers, as well as to the cues to action, self-efficacy and health motivation (Champion *et al.*, 2008).

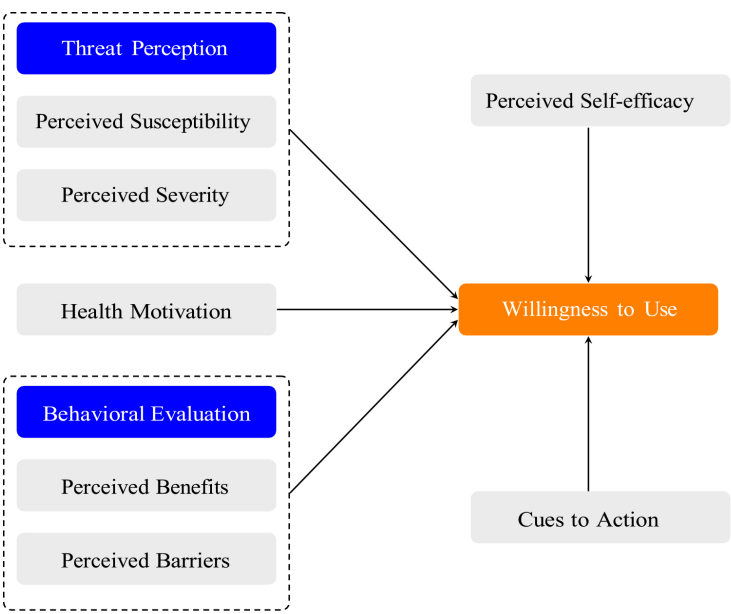
1. **Perceived Susceptibility** (beliefs about the likelihood of getting a disease or condition). For instance, a consumer must believe there is a possibility of contracting coronary heart disease before he/she becomes interested in the consumption of foods high in omega-3s.
2. **Perceived Severity** (feelings about the seriousness of contracting a disease or of leaving it untreated). It includes evaluations of both medical and clinical consequences like pain and possible social consequences such as the effect on social relations.

3. **Perceived Benefits** (a person's beliefs regarding the perceived benefits of the various available actions for reducing the disease threat, such as better taste.
4. **Perceived Barriers** (belief about the tangible and psychological costs of the advised action, such as high price).
5. **Cues to Action** (a trigger for health behavior when appropriate beliefs are held). Cues to action include external cues such as mass media campaigns, social influences, or internal cues, e.g. negative change in body state or perception of symptoms.
6. **Self-Efficacy** (an individual's perception of the facility or difficulty of performing an intended behavior, or the extent to which an individual has conscious control of a behavior).
7. **Health motivation** (readiness to be concerned about health matters).

The HBM focuses on two main aspects of individual health beliefs: threat perception (perceived susceptibility and perceived severity) and behavioral evaluation (perceived benefits and perceived barriers). Cues to action can activate health behaviors when beliefs are present (Abraham and Sheeran, 2005) and perceived barriers are low (Champion *et al.*, 2008). Motivation is the key determinant of behavior, while increasing motivation is the focus of most health behavior change interventions (Knittle *et al.*, 2018).

Figure 1 shows the HBM.

Figure 1 - The Health-Belief model – HBM



Source: Adapted from Rosenstock, 1974.

Since its development, the HBM has been used in a variety of public health related studies over the years. For example, it was applied to improve breast cancer screening practices among women (Ghaffari *et al.*, 2019), to prevent osteoporosis among health volunteers (Panahi *et al.*, 2021), to predict intentions for protective sexual behavior among college students (Xu *et al.*, 2024), and to explore the acceptance of the COVID-19 vaccine (Wong *et al.*, 2021). However, the HBM was also used in studies related to eating behavior such as the consumption of functional bread (Vassallo *et al.*, 2009), organic food (Yazdanpanah *et al.*, 2015), fruit and vegetable (Soltani *et al.*, 2017) and functional food (Febian and Annuar, 2021), and the customers' use of menu labels in restaurants (Jeong and Ham, 2018). The model has demonstrated its capacity to validate and predict a diverse range of health-related behaviors across various domains and among a wide range of populations (Janz and Becker, 1984; Carpenter, 2010).

Previous studies have also shown that the HBM is a good theoretical model for predicting willingness to use functional foods. For example, Vassallo *et al.* (2009) used the HBM to predict the willingness to use functional bread in four European countries: UK, Italy, Germany and Finland. They found that the perceived benefits, perceived barriers and health motivation were reliable predictors of willingness to consume functional bread, while the perceived susceptibility and perceived severity failed as predictors, and the role of cues to action was marginal. Febian and Annuar (2021) conducted a survey of 250 older consumers in Malaysia and found that the perceived barriers and perceived benefits directly influenced the intention to consume functional foods. However, the perceived susceptibility and cue to action did not have a direct influence on the intention to consume functional foods. Zainuddin (2019) applied the HBM to study consumer purchase intentions for functional foods the UK focusing on two different types of products, live culture yoghurt and cholesterol-lowering margarine. The analysis applied a comprehensive approach, dividing the respondents for each product into a user group and a non-user group for comparison. The perceived benefit, perceived susceptibility, perceived barrier, self-identity and cues to action determined the behavioral intention for the live yoghurt user group, while cue to action, perceived benefit and perceived barrier determined the behavioral intention for the non-user group of live yoghurt. Regarding the models for cholesterol-lowering margarine, four constructs (i.e. perceived benefit, cue to action, perceived barrier and self-identity) defined the behavioral intention for the group of cholesterol-lowering margarine users, while only the cue to action defined the behavioral intention for the group of cholesterol-lowering margarine non-users. Consequently, the conclusion is drawn that the predictors of willingness to use a product are also product-specific.

2. Materials and methods

2.1. *Materials*

The first section of the questionnaire contained an explanation of the survey and explicit written consent. The respondents then completed the socio-demographic questions and all variables of the HBM (willingness to use omega-3 enriched eggs, perceived barriers, perceived benefits, self-efficacy, perceived susceptibility, perceived severity, cue to action and health motivation). The items and sources for all variables of the HBM are listed in Table 1. All constructs of the study were assessed using a 5-point Likert scale, with responses ranging from "strongly disagree" (1) to "strongly agree" (5).

In addition, subjective knowledge was assessed by a question (Do you know what omega-3 enriched eggs are?) and yes/no answers. The participants who answered affirmatively were asked to define the term "omega-3 enriched eggs". The original questionnaire is reproduced in Appendix A. Only socio-demographic questions, subjective knowledge questions, and the HBM variables were used in this study.

Table 1 - Items for all variables of the Health Belief Model

Construct	Item	Source
WTU1	I would be willing to buy omega-3 enriched eggs if they were more available on the market.	Adopted from Yazdanpanah *et al.* (2015)
WTU2	I would intend to buy omega-3 enriched eggs if they were more available on the market.	
WTU3	I would buy omega-3 enriched eggs if they were more available on the market.	
WTU4	I would try to buy omega-3 enriched eggs if they were more available on the market.	
BARRIER1	Buying omega-3 enriched eggs for me is time-consuming.	Adopted from Yazdanpanah *et al.* (2015)
BARRIER2	Buying omega-3 enriched eggs for me is costly.	
BARRIER3	Buying omega-3 enriched eggs requires forming new habits, which is difficult.	

BARRIER4	I do not know where to buy omega-3 enriched eggs.	Adopted from Çapık and Gözüm (2011)
BENEFIT1	Omega-3 enriched eggs are tastier than non-enriched eggs.	Adopted from Deshpande *et al.* (2009)
BENEFIT2	Omega-3 enriched eggs are healthier than non-enriched eggs.	Adopted from Yazdanpanah *et al.* (2015)
BENEFIT3	Eating omega-3 enriched eggs decreases my risk of getting a coronary heart disease and blood vessel disease.	Adopted from Yazdanpanah *et al.* (2015)
EFFICACY1	Buying omega-3 enriched eggs is easy for me.	Adopted from Yazdanpanah *et al.* (2015)
EFFICACY2	Buying omega-3 enriched eggs is under my control.	
EFFICACY3	I understand the information related to omega-3 enriched eggs on the egg packaging.	Adopted from Arimbawa *et al.* (2021)
SUSCEPTIBILITY1	I feel that my chances of getting coronary heart diseases in the future are high.	Adopted from Yazdanpanah *et al.* (2015)
SUSCEPTIBILITY2	My lifestyle (eating habits, physical activity) increase chances of getting coronary heart diseases.	
SUSCEPTIBILITY3	I think I could die from a coronary heart disease.	Adopted from Çapık and Gözüm (2011)
SEVERITY1	If I get coronary heart disease, it would have a negative influence on my life quality.	Adopted from Yazdanpanah *et al.* (2015)
SEVERITY2	Having a coronary heart disease would negatively influence my social relations.	Adopted from Deshpande *et al.* (2009)
SEVERITY3	Having a coronary heart disease would negatively influence my family relations.	
CUE1	I would buy more omega-3 enriched eggs, if the doctor recommended it.	Adopted from Deshpande *et al.* (2009)
CUE2	I would buy more omega-3 enriched eggs, if friends suggested it.	
CUE3	I would buy more omega-3 enriched eggs, if family members suggested it.	

HEALTH1	Nothing is as important as good health.	Adopted from Ataei *et al.* (2021)
HEALTH2	Having good health is more valuable than financial capital.	
HEALTH3	I am motivated to use healthy products for good health.	

2.2. *Methods*

The online survey was conducted via a market research agency on a representative sample of 524 Croatian consumers selected from a representative panel using quota sampling by gender and age. The respondents were selected by screening the questions prior to the start of the questionnaire excluding those who were not responsible for food shopping in their households or who had not bought eggs in the previous month. The Qualtrics survey program was used to create and conduct an online survey that took between 7 and 10 minutes to complete and was conducted from March 20, 2023, to April 12, 2023.

Univariate statistics (frequencies) were performed in SPSS (Statistical Package for Social Science, version 21) to describe the sample and subjective knowledge. Descriptive statistics (mean, standard deviation) were calculated for all items used in the HBM. The relationships between the variables of the HBM were analyzed using the multivariate analysis technique Partial Least Square – Structural Equation Modelling (PLS-SEM) by applying SmartPLS 4 software. The suitability of the proposed model was confirmed by factor loadings, which indicate the strength of the different construct indicators and must be greater than 0.70.

The most commonly used measure of internal consistency is Cronbach's alpha and composite reliability (Rho A). According to Joseph *et al.* (2022), the values of composite reliability/Cronbach's alpha between 0.60 and 0.70 are acceptable. Convergent validity is determined by the average variance extracted (AVE), which should be equal to or greater than 0.7. Discriminant validity was measured by the Fornell-Larcker criterion. According to this method, the square root of the average variance extracted (AVE) is compared with the correlation of the latent constructs. A latent construct should better explain the variance of its own indicator than the variance of other latent constructs. The square root of the AVE of each construct should have a greater value than the correlations with other latent constructs. The extent of collinearity was assessed by the variance inflation factor (VIF) with values below 3.3 to indicate an acceptable level of correlation (Joseph *et al.*, 2022).

2.3. *Sample description*

The characteristics of the sample are listed in Table 2. The sample comprised 279 female and 245 male respondents, most of whom had a secondary school degree, 3-4 household members, were employed, and had a monthly household income of over €1,500 (64.9%).

Table 2 - Sample characteristics

		N	**%**
Gender	Male	245	46.8
	Female	279	53.2
Age	18-25	49	9.4
	26-35	125	23.9
	36-45	122	23.3
	46-55	122	23.3
	56-65	106	20.2
Number of households members	1	46	8.8
	2	131	25.0
	3	129	24.6
	4	145	27.7
	>4	73	13.9
Education	Elementary school	2	0.4
	Secondary school	231	44.1
	Bachelor programme	90	17.2
	Master programme	185	35.3
	PhD	13	2.5
	Other	3	0.6
Household monthly income	<500€	19	3.6
	500-1000€	43	8.2
	1001-1500€	122	23.3
	1501-2000€	117	22.3
	2001-2500€	90	17.2
	2501-3000€	73	13.9
	>3000€	60	11.5
Employment status	Employed	414	79.0
	Unemployed	30	5.7
	Student	23	4.4
	Retired	46	8.8
	Other	11	2.1

3. Results

3.1. *Subjective knowledge*

As many as 72.6% of the respondents said they did not know what omega-3 enriched eggs were, while 27.4% answered affirmatively. However, in the latter group, 4.8% of the participants could not explain what omega-3 enriched eggs are (omega-3 enriched eggs are organic eggs, healthy eggs, nutritious eggs). The respondents who stated that they knew what omega-3 enriched eggs were more likely to choose omega-3 enriched eggs (Table 3).

Table 3 - Influence of subjective knowledge on the willingness to use omega-3 enriched eggs

	Do you know what omega-3 enriched eggs are?	**Mean**	**S.D.**	**p**
I would be willing to buy omega-3 enriched eggs if they were more available on the market.	Yes	3.86	0.81	<0.01
	No	3.26	0.94	
I would intend to buy omega-3 enriched eggs if they were more available on the market.	Yes	3.81	0.80	<0.01
	No	3.17	0.91	
I would buy omega-3 enriched eggs if they were more available on the market.	Yes	3.76	0.84	<0.01
	No	3.18	0.94	
I would try to buy omega-3 enriched eggs if they were more available on the market.	Yes	3.80	0.87	<0.01
	No	3.17	0.96	

3.2. *Descriptive statistics*

Table 4 contains the descriptive statistics for each item included in the HBM. The respondents displayed low perceived barriers, moderate willingness to use omega-3 enriched eggs, perceived benefits, self-efficacy, perceived susceptibility and cue to action, while the perceived severity and especially health motivation were higher.

Table 4 - Descriptive statistics

		Mean	S.D.
WTU1	I would be willing to buy omega-3 enriched eggs if they were more available on the market.	3.43	.95
WTU2	I would intend to buy omega-3 enriched eggs if they were more available on the market.	3.34	.93
WTU3	I would buy omega-3 enriched eggs if they were more available on the market.	3.34	.95
WTU4	I would try to buy omega-3 enriched eggs if they were more available on the market.	3.34	.98
BARRIER1	Buying omega-3 enriched eggs for me is time-consuming.	2.28	.91
BARRIER2	Buying omega-3 enriched eggs for me is costly.	3.52	.92
BARRIER3	Buying omega-3 enriched eggs requires forming new habits, which is difficult.	2.57	.99
BARRIER4	I do not know where to buy omega-3 enriched eggs.	3.02	1.19
BENEFIT1	Omega-3 enriched eggs are tastier than non-enriched eggs.	2.91	.70
BENEFIT2	Omega-3 enriched eggs are healthier than non-enriched eggs.	3.55	.85
BENEFIT3	Eating omega-3 enriched eggs decreases my risk of getting a coronary heart disease and blood vessel disease.	3.56	.86
EFFICACY1	Buying omega-3 enriched eggs is easy for me.	3.35	.92
EFFICACY2	Buying omega-3 enriched eggs is under my control.	3.40	.95
EFFICACY3	I understand the information related to omega-3 enriched eggs on the egg packaging.	3.71	.87
HEALTH1	Nothing is as important as good health.	4.26	.77
HEALTH2	Having good health is more valuable than financial capital.	4.36	.72
HEALTH3	I am motivated to use healthy products for good health.	4.08	.75

SUSCEPTIBILITY1	I feel that my chances of getting coronary heart diseases in the future are high.	3.13	.94
SUSCEPTIBILITY2	My lifestyle (eating habits, physical activity) increase chances of getting coronary heart diseases.	2.95	1.03
SUSCEPTIBILITY3	I think I could die from a coronary heart disease.	2.80	.97
SEVERITY1	If I get coronary heart disease, it would have a negative influence on my life quality.	3.93	.83
SEVERITY2	If I get coronary heart disease, it would have a negative influence on my social relations.	3.67	.92
SEVERITY3	If I get coronary heart disease, it would have a negative influence on my family relations.	3.73	.92
CUE1	I would buy more omega-3 enriched eggs, if the doctor recommended it.	3.27	.98
CUE2	I would buy more omega-3 enriched eggs, if friends suggested it.	2.93	.94
CUE3	I would buy more omega-3 enriched eggs, if family members suggested it.	3.20	.98

3.3. *Measurement model*

As shown in Table 5, the Cronbach's alpha values and composite reliability (Rho A) for willingness to use omega-3 enriched eggs, perceived benefit, self-efficacy, perceived susceptibility, perceived severity, cue to action, and health motivation are higher than 0.70. These results mean that the reliability of the model is satisfactory (Joseph *et al*., 2022). Two items on the perceived barriers were dropped ("Buying omega-3 enriched eggs is too expensive for me" and "I do not know where to buy omega-3 enriched eggs") as they had low Cronbach's alpha and composite reliability (Rho A). However, the other two items measuring the perceived barriers had satisfactory Cronbach's alpha (0.63, which is acceptable according to Joseph *et al*., 2022 and Ursachi *et al*., 2015) and Rho A. Therefore, further analysis was conducted with these two items to measure the perceived barriers. The value of the average variance extracted (AVE) for each of the constructs should be at least 0.7. The construct of willingness to use omega-3 enriched eggs recorded the highest AVE value (0.889). Moreover, the results show strong relationships between the latent constructs and the items with factor loadings > 0.7, ranging from 0.584 to 0.989. The results of the Fornell-Larcker criterion show that the discriminant validity of the constructs is given (Table 6). Finally, the variance inflation factors (VIF) showed no collinearity between the constructs as all VIF values were below 3.3 (Table 7).

Table 5 - Factor loadings, Cronbach's α, Rho A, and AVE of the measurement model

Factor loadings, Cronbach's α, Rho A, and AVE of the measurement model								
Item	**WTU**	**Barriers**	**Benefits**	**Efficacy**	**Health**	**Susceptibility**	**Severity**	**CUE**
WTU1	0.927							
WTU2	0.958							
WTU3	0.953							
WTU4	0.934							
BARRIER2		1.000						
BENEFIT1			0.673					
BENEFIT2			0.904					
BENEFIT3			0.881					
EFFICACY1				0.853				
EFFICACY2				0.828				
EFFICACY3				0.795				
HEALTH1					0.786			
HEALTH2					0.811			
HEALTH3					0.888			
SUSCEPTIBILITY1						0.886		
SUSCEPTIBILITY2						0.845		
SUSCEPTIBILITY3						0.814		
SEVERITY1							0.853	
SEVERITY2							0.876	
SEVERITY3							0.901	

CUE1							0.854
CUE2							0.889
CUE3							0.902
Cronbach's α	0.958	0.760	0.769	0.791	0.813	0.853	0.857
Rho A	0.959	0.795	0.784	0.918	0.867	0.883	0.862
AVE	0.889	0.682	0.682	0.688	0.721	0.768	0.778

Table 6 - Discriminant validity

	Barriers	**Benefits**	**Cue**	**Efficacy**	**Health**	**Severity**	**Susceptibility**	**WTU**
Barriers	1.000							
Benefits	–0.127	**0.826**						
Cue	–0.269	0.518	0.882					
Efficacy	–0.181	0.403	0.235	**0.826**				
Health	–0.014	0.243	0.173	0.251	0.830			
Severity	0.114	0.330	0.271	0.202	0.298	**0.877**		
Susceptibility	0.049	0.191	0.243	0.036	–0.018	0.286	0.849	
WTU	–0.296	0.601	0.549	0.364	0.282	0.213	0.184	**0.943**

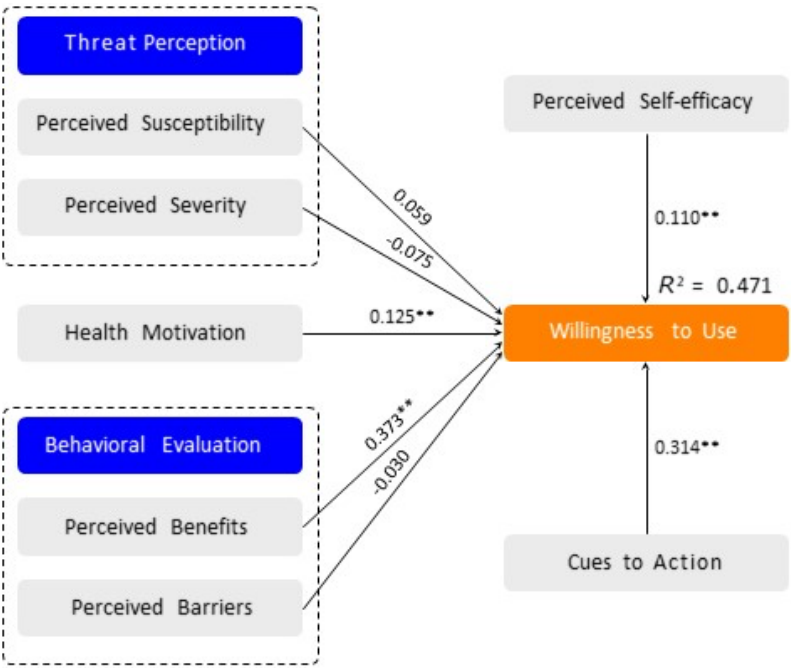
Table 7 - VIF

	WTU
Barriers	1.267
Benefits	1.618
Cue	1.437
Efficacy	1.410
Health	1.213
Severity	1.291
Susceptibility	1.164

Notes: Values below 3.3 indicate an acceptable level of correlation among constructs.

Figure 2 shows the direct effects between the considered constructs. The results confirm that most of the variables from the original HBM (perceived barriers, perceived benefits, self-efficacy, cue to action and health motivation) have a significant influence on the willingness to consume omega-3 enriched eggs, with the perceived benefits being the strongest predictor. The perceived benefits ($\beta_{BEN-WTU} = 0.373$; $t = 7.609$; $p = 0.000$) and cue to action ($\beta_{CTU-WTU} = 0.314$; $t = 6.975$; $p = 0.000$) had a direct and positive affect on the willingness to consume omega-3 enriched eggs. Self-efficacy ($\beta_{SE-WTU} = 0.110$; $t = 2.628$ $p < 0.01$) was found to be a weak but significant predictor of willingness to use. Health motivation ($\beta_{HM-WTU} = 0.125$; $t = 3.466$; $p < 0.01$) was positively and significantly associated with willingness to use omega-3 enriched eggs. However, there was no significant effect of the threat perception variables (the perceived severity and perceived susceptibility) and the perceived barriers on the willingness to use the omega-3 enriched eggs ($p > 0.05$).

Figure 2 - The estimated Health-Belief model – HBM



Notes: * p < 0.05, ** p < 0.01

4. Discussion

Despite the growing interest in functional foods, there is a lack of research investigating the psychological predictors of consumers' willingness to use omega-3 enriched eggs. Furthermore, to our knowledge, there are no previous studies that used the HBM specifically to predict the willingness to use omega-3 enriched eggs, particularly in lower income EU countries. The present study fills these gaps by providing new insights into the factors influencing consumer acceptance in this under-researched context.

The results suggest that the HBM (HBM) is applicable in the context of the omega-3 enriched eggs, explaining 47.1% of the variance in consumers' willingness to use and consume them. This is similar to Yazdanpanah *et al.* (2015), who found that the HBM explained 42% of the variance in young adults' willingness to consume organic foods. An R-squared between 0.10 and 0.50 (or 10-50 percent when expressed as a percentage) is acceptable in social science research when some or most of the explanatory variables are statistically significant (Ozili, 2023). Considering that most of the variables

are statistically significant, it can be concluded that the HBM is acceptable for predicting the consumption of omega-3 enriched eggs. A lower R-squared could be related to the low level of knowledge about omega-3 enriched eggs with the Croatian respondents since as many as 72.6% of the respondents did not know what omega-3 enriched eggs were. Similarly, Sass *et al.* (2018) found that consumer knowledge of the benefits of these products is limited, while Baba *et al.* (2017) found that consumers may have little familiarity with the omega-3 enriched eggs. Therefore, it is suggested for future studies to include this knowledge in the model to test the predictive power of the extended model. The results of our structural model are consistent with the previous studies and emphasize the strong influence of the perceived benefit and cue to action on the willingness to consume omega-3 enriched eggs. Specifically, the perceived benefit was found to be the strongest predictor of willingness to use, which is in line with the previous findings (Verbeke, 2005; Siegrist *et al.*, 2015; Alagarsamy and Mehrolia, 2023) highlighting that health-related benefits significantly influence consumers' acceptance of functional foods. Individuals who recognize the benefits associated with the consumption of omega-3 fatty acid-enriched eggs are more likely to consume these products. Therefore, from the policy and commercial perspectives, communicating the benefits of functional foods could support the increase of the perceived benefits. These findings are in line with the study by Osunsanmi *et al.* (2024) who claim that food producers should emphasize the health benefits of functional foods in marketing materials and refer to government agency approval when functional foods have demonstrated health benefits and have been authorized by the relevant government agency. This will facilitate the consumers' perceptions of the products as more effective. Furthermore, the cue to action has a significant positive effect on the willingness to use them, suggesting that specific triggers or sources of information play crucial roles in promoting the consumption of omega-3 enriched eggs. This is consistent with the broader literature on health-related behavior, which suggests that cue to action can be a motivator for an individual's health behavior (Vassallo *et al.*, 2009). It is important to identify which sources of cue for action (besides doctors, friends and family members) can exert a strong influence on consumers' willingness to use omega-3 enriched eggs. According to Rezai *et al.* (2017), the examples of cue include advice from parents, the elderly, close friends, doctors and lecturers that can influence, motivate or compel the consumers to purchase functional foods. Other important sources that can motivate consumers are advertising, media incentives and health campaigns.

As expected, perceived barriers have a negative (but not significant) influence on the willingness to consume omega-3 enriched eggs. To enhance the knowledge about functional foods and save the consumers' time

(which are the main barriers to consumption), it is important to organize information campaigns about the benefits of consuming functional foods through different media channels. In addition, the availability of functional foods should be increased by ensuring that they are foods offered in all grocery stores. As the previous research regarding the effects of barriers on the willingness to use functional foods is inconsistent, new studies are needed to understand why the presence or lack of barriers have a significant impact on the willingness to consume omega-3 enriched eggs. Additionally, new studies should include more items to measure the specific barriers in relation to a particular product.

The positive association of health motivation with the willingness to consume omega-3 enriched eggs is consistent with the literature suggesting that a general interest in health contributes to the acceptance of functional foods (Siegrist *et al.*, 2015). It is important to develop strategies that can increase consumer motivation for health and lead to increased demand for functional foods such as omega-3 enriched eggs.

While self-efficacy showed a weaker but still significant association with willingness to use omega-3 enriched eggs, this suggests that consumers' confidence in their ability to incorporate these eggs into their diets influences their willingness to consume, albeit to a lesser extent. The results of our study are consistent with the previous studies (Cox *et al.*, 2004; Henson *et al.*, 2010; Salleh *et al.*, 2016). Nystrand and Olsen (2020) found that the motivation to consume functional foods largely depends on the consumers' confidence in their ability to do so. Self-efficacy could be enhanced by reducing identified barriers such as low knowledge (Sass *et al.*, 2018) and availability as well as familiarity (Baba *et al.*, 2017) with omega-3 enriched eggs.

Interestingly, perceived severity and perceived susceptibility (threat perception variables) had no significant effect on the willingness to use omega-3 enriched eggs. This is consistent with a previous study using the HBM for functional bread (Vassallo *et al.*, 2009), suggesting that the lack of influence of threat perception variables may be due to the fact that consumers do not consume functional foods to lower their cholesterol levels or avoid certain diseases. In addition, a large proportion of Croatian respondents did not know what omega3-enriched eggs were, which points to a possible reason for the threat perception variables showing no influence on the willingness to use omega-3 enriched eggs in Croatia. The respondents did not associate the consumption of omega-3 enriched eggs with the decrease of coronary heart diseases. Furthermore, the supply of and demand for omega-3 enriched eggs in Croatia is low, which indicates that this market is still in the development phase.

The research findings have practical implications for policy makers as well as for the producers and marketers of omega-3 enriched eggs (who aim to

promote healthier food choices among the consumers). Public campaigns by national and local authorities should aim to raise consumer awareness of the importance of a healthy and balanced diet and warn of the risk of various diseases that can be attributed to unhealthy diets, particularly the diseases that have serious consequences and high social costs, such as coronary heart diseases. This includes the recommendations for the consumption of foods rich in and/or fortified with omega-3 fatty acids to enhance heart protection. Public information campaigns should include theoretical lectures, educational workshops and educational visits, in addition to advertising via the mass media, the Internet and social networks. Experience shows that non-governmental organizations funded by public programs are particularly successful in promoting healthy lifestyle. Endorsements by influential people (doctors and nutritionists) are recommended for information campaigns, especially through the mass media. Public information campaigns can increase consumer fear (threat perspective – severity and susceptibility) of coronary heart diseases and their consequences and raise consumer awareness of the need to consume omega-3 fatty acid rich foods. Commercial advertising campaigns should aim to increase the consumers' knowledge of omega-3 enriched eggs and their motivation to purchase them. For people with stronger health interest, advertising should be based on presenting the facts about the health benefits of consuming omega-3 enriched eggs and rational consumer activation. For the people with less pronounced health interest, advertising should be based on negative appeals that trigger the fear of the consequences of coronary heart diseases. These advertising campaigns are recommended to be conducted by a combination of television advertising, internet and social networks.

While this study contributes to the existing literature on functional foods and to a better understanding of the psychological predictors of willingness to use omega3-enriched eggs, it has some limitations. Firstly, the respondents were recruited from online market panels, which indicates a possibility of selection bias. Secondly, two items were excluded from the construct of barriers due to low reliability and this has resulted in the construct's consisting of only two statements. Thirdly, omega-3 enriched eggs are not yet widely available in the studied market, which may have influenced the respondents' willingness to use them. Fourthly, the sample consists of the consumers from a single low-income EU country, which limits the generalizability of the results to other regions or economic contexts.

Conclusions

This study extends the application of the HBM to the food sector by providing new evidence on the predictors of willingness to use omega-3 enriched eggs in a developing country, filling a gap in the literature that focuses predominantly on high-income countries and health-related sectors. The results confirm that the HBM (HBM) is a valuable theoretical framework to understand the factors that influence consumers' willingness to use omega-3 enriched eggs. Specifically, the findings show that perceived benefits, cues to action, health motivation and self-efficacy positively influence willingness to consume omega-3 enriched eggs, with perceived benefits having the strongest positive effect. Conversely, perceived barriers were found to have a negative but non-significant effect, while threat perception variables – perceived severity and perceived susceptibility – had no significant effect on willingness to use omega-3 enriched eggs. The HBM explained 47.1% of the variance in consumers' willingness to use omega-3 enriched eggs.

These results highlight the importance of targeted communication strategies that emphasize the health benefits of omega-3 enriched eggs to increase consumer acceptance. Highlighting these benefits could help ensure their inclusion in consumers' diets as functional foods. The study adds to the growing body of research on functional food acceptance and provides actionable insights for marketers and policy makers pursuing to promote healthier eating habits.

Future research could strengthen the HBM framework by incorporating additional constructs, such as socio-demographic variables, past behavior, or objective knowledge. Investigations into the simultaneous application of different theoretical models could also facilitate identifying the most effective predictive approach for functional food choices.

Future research could extend these findings by investigating other functional foods since their acceptance is often influenced by specific combinations of carriers, ingredients, price, taste, branding, and health information. In addition, investigating the reasons for the lack of significant effects of perceived severity and susceptibility could provide insights that could refine health communication strategies.

Acknowledgements

Funding statement: This work was supported by the AgriFoodBoost Horizon 2020 project [grant numbers 952303].

References

Abraham, C., & Sheeran, P. (2005). The health belief model. *Predicting health behaviour*, *2*(1), 28-80.

Alagarsamy, S., & Mehrolia, S. (2023). Predicting intention to buy organic food during the Covid-19 pandemic: A multi-group analysis based on the health belief model. *Journal of International Food & Agribusiness Marketing*, *35*(4), 508-534. Doi: 10.1080/08974438.2022.2035881.

Ares, G., Giménez, A., & Deliza, R. (2010). Influence of three non-sensory factors on consumer choice of functional yogurts over regular ones. *Food quality and preference*, *21*(4), 361-367. Doi: 10.1016/j.foodqual.2009.09.002.

Arimbawa, P. E., Hita, I. P. G. A. P., & Wardhana, Z. F. (2021). Health belief model and the understanding of rational use of medicines. *International Journal of Public Health Science*, *10*(2), 411-417. Doi: 10.11591/ijphs.v10i2.20737.

Armitage, C. J., & Conner, M. (1999). Distinguishing perceptions of control from self-efficacy: Predicting consumption of a low-fat diet using the theory of planned behavior. *Journal of applied social psychology*, *29*(1), 72-90. Doi: 10.1111/j.1559-1816.1999.tb01375.x.

Armitage, C. J., & Conner, M. (2000). Social cognition models and health behaviour: A structured review. *Psychology and health*, *15*(2), 173-189. Doi: 10.1080/08870440008400299.

Ataei, P., Gholamrezai, S., Movahedi, R., & Aliabadi, V. (2021). An analysis of farmers' intention to use green pesticides: The application of the extended theory of planned behavior and health belief model. *Journal of Rural Studies*, *81*, 374-384. Doi: 10.1016/j.jrurstud.2020.11.003.

Baba, Y., Kallas, Z., & Realini, C. (2017). Application of the analytical hierarchy process to evaluate consumer acceptance and preferences for omega-3 enriched eggs. *British Food Journal*, *119*(7), 1459-1472.

Baker, M. T., Lu, P., Parrella, J. A., & Leggette, H. R. (2022). Consumer acceptance toward functional foods: A scoping review. *International Journal of Environmental Research and Public Health*, *19*(3), 1217. Doi: 10.3390/ijerph19031217.

Bimbo, F., Bonanno, A., Nocella, G., Viscecchia, R., Nardone, G., De Devitiis, B., & Carlucci, D. (2017). Consumers' acceptance and preferences for nutrition-modified and functional dairy products: A systematic review. *Appetite*, *113*, 141-154. Doi: 10.1016/j.appet.2017.02.031.

Çapık, C., & Gözüm, S. (2011). Development and validation of health beliefs model scale for prostate cancer screenings (HBM-PCS): Evidence from exploratory and confirmatory factor analyses. *European Journal of Oncology Nursing*, *15*(5), 478-485. Doi: 10.1016/j.ejon.2010.12.003.

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health communication*, *25*(8), 661-669. Doi: 10.1080/10410236.2010.521906.

Champion, V. L., & Skinner, C. S. (2008). The health belief model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp. 45-65). Jossey-Bass.

Conner, M. (2010). Cognitive determinants of health behavior. *Handbook of behavioral medicine: methods and applications*, 19-30.

Conroy, D. M., Gan, C., Errmann, A., & Young, J. (2021). Fortifying well-being: How Chinese consumers and doctors navigate the role of functional foods. *Appetit*e, *164*, 105296. Doi: 10.1016/j.appet.2021.105296.

Cox, D. N., Koster, A., & Russell, C. G. (2004). Predicting intentions to consume functional foods and supplements to offset memory loss using an adaptation of protection motivation theory. *Appetite*, *43*(1), 55-64. Doi: 10.1016/j.appet.2004.02.003.

Deshpande, S., Basil, M. D., & Basil, D. Z. (2009). Factors influencing healthy eating habits among college students: An application of the health belief model. *Health marketing quarterly*, *26*(2), 145-164. Doi: 10.1080/07359680802619834.

Embling, R., Neilson, L., Melloer, C., Durodola, M., Rouse, N., Haselgrove, A., Shipley, K., Tales, A., Wilkinson, L. (2024). Exploring consumer beliefs about novel fortified foods: A focus group study with UK-based older and younger adult consumers. *Appetite*, *193*. Doi: 10.1016/j.appet.2023.107139.

Fasakin, I., von Massow, M. (2024). Consumer's preferences and willingness to pay for immune enhanced dairy products in Canada. *Appetite*, *196*, 107156. Doi: 10.1016/j.appet.2023.107156.

Febian, F. I., & Annuar, S. N. S. (2021). Intention to Consume Functional Foods in Malaysia Among Older Consumers: Application of the Health Belief Model. In Eurasian Business and Economics Perspectives: *Proceedings of the 30th Eurasia Business and Economics Society Conference* (pp. 131-141). Springer International Publishing.

Fraeye, I., Bruneel, C., Lemahieu, C., Buyse, J., Muylaert, K., & Foubert, I. (2012). Dietary enrichment of eggs with omega-3 fatty acids: A review. *Food Research International*, *48*(2), 961-969. Doi: 10.1016/j.foodres.2012.03.014.

Ghaffari, M., Esfahani, S. N., Rakhshanderou, S., & Koukamari, P. H. (2019). Evaluation of health belief model-based intervention on breast cancer screening behaviors among health volunteers. *Journal of Cancer Education*, *34*(5), 904-912. Doi: 10.1007/s13187-018-1394-9.

Joseph, F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modeling (PLS-SEM). In SAGE Publications, Incorporated.

Henson, S., Cranfield, J., & Herath, D. (2010). Understanding consumer receptivity towards foods and non-prescription pills containing phytosterols as a means to offset the risk of cardiovascular disease: an application of protection motivation theory. *International Journal of Consumer Studies*, *34*(1), 28-37. Doi: 10.1111/j.1470-6431.2009.00829.x.

Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: A Decade Later. *Health Education Quarterly*, *11*(1). Doi: 10.1177/109019818401100101.

Jeong, J. Y., & Ham, S. (2018). Application of the Health Belief Model to customers' use of menu labels in restaurants. *Appetite*, *123*, 208-215. Doi: 10.1016/j.appet.2017.12.012.

Kassis, N. M., Beamer, S. K., Matak, K. E., Tou, J. C., & Jaczynski, J. (2010). Nutritional composition of novel nutraceutical egg products developed with

omega-3-rich oils. *LWT-Food Science and Technology*, *43*(8), 1204-1212. Doi: 10.1016/j.lwt.2010.04.006.

Kim, H. S., Ahn, J., & No, J. K. (2012). Applying the Health Belief Model to college students' health behavior. *Nutrition research and practice*, *6*(6), 551-558. Doi: 10.4162/nrp.2012.6.6.551.

Knittle, K., Nurmi, J., Crutzen, R., Hankonen, N., Beattie, M., & Dombrowski, S. U. (2018). How can interventions increase motivation for physical activity? A systematic review and meta-analysis. *Health psychology review*, *12*(3), 211-230. Doi: 10.1080/17437199.2018.1435299.

Krutulyte, R., Grunert, K. G., Scholderer, J., Lähteenmäki, L., Hagemann, K. S., Elgaard, P., … & Graverholt, J. P. (2011). Perceived fit of different combinations of carriers and functional ingredients and its effect on purchase intention. *Food Quality and Preference*, *22*(1), 11-16. Doi: 10.1016/j.foodqual.2010.06.001.

Lesnierowski, G., & Stangierski, J. (2018). What's new in chicken egg research and technology for human health promotion? – A review. *Trends in food science & technology*, *71*, 46-51.

Martirosyan, D., Kanya, H., & Nadalet, C. (2021). Can functional foods reduce the risk of disease? Advancement of functional food definition and steps to create functional food products. *Functional Foods in Health and Disease*, *11*(5), 213-221. Doi: 10.31989/ffhd.v11i5.788.

Mesías, F. J., Martínez-Carrasco, F., Martínez, J. M., & Gaspar, P. (2011). Functional and organic eggs as an alternative to conventional production: a conjoint analysis of consumers' preferences. *Journal of the Science of Food and Agriculture*, *91*(3), 532-538. Doi: 10.1002/jsfa.4217.

Moutinho, P., Andrade, I., & Macedo, A. (2022). Functional food consumption by Portuguese university community: Knowledge, barriers and motivators. *Economia agro-alimentare*, (2). Doi: 10.3280/ecag2022oa13258.

Mozaffarian, D., & Wu, J. H. (2011). Omega-3 fatty acids and cardiovascular disease: effects on risk factors, molecular pathways, and clinical events. *Journal of the American College of Cardiology*, *58*(20), 2047-2067. Doi: 10.1016/j.jacc.2011.06.063.

Nagy, L. B., Vecchio, R., Caso, G., Eren, B. A., Unger-Plasek, B., Lakner, Z., Pfeiffer, L., Tompa, O., Tóth, Z. B., Bognár, B., Fehér, O., Temesi, A. (2024). Eliciting vulnerable consumers' preferences for redundant vs. organic and functional claims: Experimental auction studies among young and older adults, *Journal of Agriculture and Food Research*, 15, 100925. Doi: 10.1016/j.jafr.2023.100925.

Natarajan, T., Geetha Raveendran Nair, J., Jayapal, J. (2024). Subjective norms as a moderator in the consumption behaviour of branded functional beverages post-COVID-19 pandemic: a pragmatic view. *Asia-Pacific Journal of Business Administration*, *16*(2), 307-330. Doi: 10.1108/APJBA-03-2022-0130.

Nguyen, N., Nguyen, H. V., Nguyen, P. T., Tran, V. T., Nguyen, H. N., Nguyen, T. M. N.,… & Nguyen, T. H. (2019). Some key factors affecting consumers' intentions to purchase functional foods: A case study of functional yogurts in Vietnam. *Foods*, *9*(1), 24. Doi. 10.3390/foods9010024.

Nystrand, B. T., & Olsen, S. O. (2020). Consumers' attitudes and intentions toward consuming functional foods in Norway. *Food Quality and Preference*, *80*, 103827. Doi: 10.1016/j.foodqual.2019.103827.

Orji, R., Vassileva, J., & Mandryk, R. (2012). Towards an effective health interventions design: an extension of the health belief model. *Online journal of public health informatics*, *4*(3), e61050. Doi: 10.5210/ojphi.v4i3.4321.

Osunsanmi, A. S., Ayandibu, A. O., Heeralal, S. (2024). Assessing the factors that influence consumer's purchase behaviour towards functional foods. *International Journal of Research in Business and Social Science (IJRBS)*, *13*(2). Doi: 10.20525/ijrbs.v13i2.3192.

Ozen, A. E., Pons, A., & Tur, J. A. (2012). Worldwide consumption of functional foods: a systematic review. *Nutrition reviews*, *70*(8), 472-481. Doi: 10.1111/j.1753-4887.2012.00492.x.

Ozen, A. E., Bibiloni Esteva, M. D. M., Pons, A., & Tur, J. A. (2014). Consumption of functional foods in Europe; a systematic review. *Nutricion hospitalaria*, *29*(3), 470-478. Doi: 10.3305/nh.2014.29.3.7148.

Ozili, P. K. (2023). The acceptable R-square in empirical modelling for social science research. In *Social research methodology and publishing results: A guide to non-native English speakers* (pp. 134-143). IGI global.

Palmieri, N., Stefanoni, W., Latterini, F., & Pari, L. (2022). Factors influencing Italian consumers' willingness to pay for eggs enriched with omega-3-fatty acids. *Foods*, *11*(4), 545. Doi: 10.3390/foods11040545.

Panahi, R., Siboni, F. S., Kheiri, M., Ghoozlu, K. J., Shafaei, M., & Dehghankar, L. (2021). Promoting the adoption of behaviors to prevent osteoporosis using the health belief model integrated with health literacy: quasi-experimental intervention study. *BMC Public Health*, *21*, 1-11.

Pappalardo, G., & Lusk, J. L. (2016). The role of beliefs in purchasing process of functional foods. *Food quality and preference*, *53*, 151-158. Doi: 10.1016/j.foodqual.2016.06.009.

Park, O. H., Hoover, L., Dodd, T., Huffman, L., & Feng, D. (2011). The use of the Modified Protection Motivation Theory to explore adult consumers' functional foods consumption behavior.

Pistollato, F., Iglesias, R. C., Ruiz, R., Aparicio, S., Crespo, J., Lopez, L. D., Manna, P. P., Giampieri, F., & Battino, M. (2018). Nutritional patterns associated with the maintenance of neurocognitive functions and the risk of dementia and Alzheimer's disease: A focus on human studies. *Pharmacological research*, *131*, 32-43. Doi: 0.1016/j.phrs.2018.03.012.

Povey, R., Conner, M., Sparks, P., James, R., & Shepherd, R. (2000). Application of the Theory of Planned Behaviour to two dietary behaviours: Roles of perceived control and self-efficacy. *British Journal of Health Psychology*, *5*(2), 121-139. Doi: 10.1348/135910700168810.

Rezai, G., Teng, P. K., Shamsudin, M. N., Mohamed, Z., & Stanton, J. L. (2017). Effect of perceptual differences on consumer purchase intention of natural functional food. *Journal of Agribusiness in Developing and Emerging Economies*, *7*(2), 153-173.

Rodgers, W. M., Conner, M., & Murray, T. C. (2008). Distinguishing among perceived control, perceived difficulty, and self-efficacy as determinants of intentions and behaviours. *British journal of social psychology*, *47*(4), 607-630. Doi: 10.1348/014466607X248903.

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs*, *2*(4), 328-335.

Salleh, H. S., Noor, N. A. M., & Mat, N. H. N. (2016). Functional Food Consumption Behaviour: The Role of Self-Efficacy. *Advanced Science Letters*, *22*(12), 4271-4274. Doi: 10.1166/asl.2016.8124.

Sass, C. A. B., Kuriya, S., Da Silva, G. V., Silva, H. L. A., Da Cruz, A. G., Esmerino, E. A., & Freitas, M. Q. (2018). Completion task to uncover consumer's perception: a case study using distinct types of hen's eggs. *Poultry Science*, *97*(7), 2591-2599. Doi: 10.3382/ps/pey103.

Sharma, M. K., Dinh, T., & Adhikari, P. A. (2020). Production performance, egg quality, and small intestine histomorphology of the laying hens supplemented with phytogenic feed additive. *Journal of Applied Poultry Research*, *29*(2), 362-371. Doi: 10.1016/j.japr.2019.12.001.

Siegrist, M., Shi, J., Giusto, A., & Hartmann, C. (2015). Worlds apart. Consumer acceptance of functional foods and beverages in Germany and China. *Appetite*, *92*, 87-93. Doi: 10.1016/j.appet.2015.05.017.

Siegrist, M., Stampfli, N., & Kastenholz, H. (2008). Consumers' willingness to buy functional foods. The influence of carrier, benefit and trust. *Appetite*, *51*(3), 526-529. Doi: 10.1016/j.appet.2008.04.003.

Soltani, R., Torabi, A., Hasanzadeh, A., & Sharifirad, G. (2017). Factors behind fruit and vegetable consumption among the elderly with functional constipation: a study based on the health belief model. *Modern Care Journal*, *14*(1). Doi: 10.5812/modernc.63387.

Terry, D. J., & O'Leary, J. E. (1995). The theory of planned behaviour: The effects of perceived behavioural control and self-efficacy. *British journal of social psychology*, *34*(2), 199-220. Doi: 10.1111/j.2044-8309.1995.tb01058.x.

Urala, N., & Lähteenmäki, L. (2004). Attitudes behind consumers' willingness to use functional foods. *Food quality and preference*, *15*(7-8), 793-803. Doi: 10.1016/j.foodqual.2004.02.008.

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia economics and finance*, *20*, 679-686. Doi: 10.1016/S2212-5671(15)00123-9.

Vassallo, M., Saba, A., Arvola, A., Dean, M., Messina, F., Winkelmann, M., … & Shepherd, R. (2009). Willingness to use functional breads. Applying the Health Belief Model across four European countries. *Appetite*, *52*(2), 452-460. Doi: 10.1016/j.appet.2008.12.008.

Vecchio, R., Van Loo, E. J., & Annunziata, A. (2016). Consumers' willingness to pay for conventional, organic and functional yogurt: evidence from experimental auctions. *International Journal of Consumer Studies*, *40*(3), 368-378. Doi: 10.1111/ijcs.12264.

Verbeke, W. (2005). Consumer acceptance of functional foods: socio-demographic, cognitive and attitudinal determinants. *Food quality and preference*, *16*(1), 45-57. Doi: 10.1016/j.foodqual.2004.01.001.

Wang, M., J. Zhou, J. Tavares, C. A. Pinto, J. A. Saraiva, M. A. Prieto, H. Cao, J. Xiao, J. Simal-Gandara, and F. J. Barba (2022). Applications of algae to obtain healthier meat products: A critical review on nutrients, acceptability and quality. *Food Science and Nutrition*, 1-18. Doi: 10.1080/10408398.2022.2054939.

Wong, M. C., Wong, E. L., Huang, J., Cheung, A. W., Law, K., Chong, M. K., … & Chan, P. K. (2021). Acceptance of the COVID-19 vaccine based on the health belief model: A population-based survey in Hong Kong. *Vaccine*, *39*(7), 1148-1156. Doi: 10.1016/j.vaccine.2020.12.083.

Xu, W., He, T., Zou, F., & Liu, J. (2024). Using the Health Belief Model to Predict Condom Use Intentions Among College Students. *The Journal of Medicine, Humanity and Media*, *2*(1), 94-107. Doi: 10.62787/mhm.v2i1.45.

Yashodhara, B. M., Umakanth, S., Pappachan, J. M., Bhat, S. K., Kamath, R., & Choo, B. H. (2009). Omega-3 fatty acids: a comprehensive review of their role in health and disease. *Postgraduate medical journal*, *85*(1000), 84-90. Doi: 10.1136/pgmj.2008.073338.

Yazdanpanah, M., Forouzani, M., & Hojjati, M. (2015). Willingness of Iranian young adults to eat organic foods: Application of the Health Belief Model. *Food quality and preference*, *41*, 75-83.Doi: 10.1016/j.foodqual.2014.11.012.

Yeh, C. H., Menozzi, D., & Török, Á. (2020). Eliciting egg consumer preferences for organic labels and omega 3 claims in Italy and Hungary. *Foods*, *9*(9), 1212. doiDoi 10.3390/foods9091212.

Zainuddin, M. T. B. (2019). A structural equation model of consumers' intentions to consume functional foods: an application to yoghurt and margarine in the UK. Doctoral dissertation, Newcastle University.

Appendix A

Omega 3 eggs final questionnaire

Start of Block: Introduction

Dear, we invite you to participate in research about eggs consumption, which is carried out as part of the AgriFoodBoost HORIZON 2020 project. The aim of the research is to determine the opinion and knowledge of consumers about egg production and their behavior in buying and consuming eggs, The research is completely anonymous, voluntary and carried out solely for scientific purposes, so it is very important to provide honest and true answers. The questionnaire takes about 10 minutes. The project leader is prof. Marija Cerjak from the Faculty of Agriculture, University of Zagreb. You have the right to withdraw from the survey at any time and for any reason. Therefore, we ask for your consent to the processing of personal data, reminding you that your participation is voluntary.

○ I give my consent and declare that I am 18 years old and older. (1)
○ I do not give consent and refuse to participate in the survey. (2)

End of Block: Introduction

Start of Block: Sociodemographics

SD1 Gender
○ Male (1)
○ Woman (5)
○ I don't want to make a statement (6)

---

*

SD2
Age

SD3 Number of household members including you?

SD4 Education level

- ○ Primary school (1)
- ○ High school (2)
- ○ University Bachelor degree (3)
- ○ University Master degree (4)
- ○ PhD (5)
- ○ Other (6)

SD5 Total household income

- ○ Up to 500 EUR (1)
- ○ 500-1000 EUR (2)
- ○ 1001-1500 EUR (3)
- ○ 1501-2000 EUR (4)
- ○ 2001-2500 EUR (5)
- ○ 2501-3000 EUR (6)
- ○ More than 3000 EUR (7)

SD6 Where do you currently live?

- ○ Place with less than 5 000 inhabitants
- ○ Place with 5 000-10 000 inhabitants
- ○ Place with 10 000-100 000 inhabitants
- ○ Place with 100 000-500 000 inhabitants
- ○ Place with more than 500 000 inhabitants

X→

SD6a Mark the county where you live

- ○ Zagreb county (1)
- ○ Krapina-Zagorje county (2)
- ○ Sisak-Moslavina county (3)
- ○ Karlovac county (4)
- ○ Varaždin county (5)
- ○ Koprivnica-Križevci county (6)
- ○ Bjelovar-Bilogora county (7)
- ○ Primorje-Gorski Kotar county (8)
- ○ Lika-Senj county (9)
- ○ Virovitica-Podravina county (10)
- ○ Požega-Slavonija county (11)
- ○ Brod-Posavina county (12)
- ○ Zadar county (13)
- ○ Osijek-Baranja county (14)
- ○ Šibenik-Knin county (15)
- ○ Vukovar-Srijem county (16)
- ○ Split-Dalmatia county (17)
- ○ Istria county (18)
- ○ Dubrovnik-Neretva county (19)
- ○ Međimurje county (20)
- ○ City of Zagreb (21)

SD7 Occupation

- ○ Employed full time (1)
- ○ Employed part-time (2)
- ○ Unemployed) (3)
- ○ Student (4)
- ○ Retired (5)
- ○ Others (6) _____

End of Block: Sociodemographics

Start of Block: Screening

A1 How often do you shop food for yourself or for your household?

- ○ Once a week or more frequently (4)
- ○ Two to three times a month (3)
- ○ Once a month or less frequently (2)
- ○ Never (1), thank you for your participation but in this research we want to include only food buyers

Display This Question:
If How often do you shop food for yourself or for your household? != never

E2 Have you bought eggs in the last one month?

- ○ Yes (1)
- ○ No (2)

End of Block: Screening

Start of Block: Behavior in purchasing and consuming Omega 3 eggs

Page Break	

P15 Please mark the following statements as true or false.

	True (1)	False (3)
Omega-3 fatty acids increase the risk factor in the development of heart disease (1)	○	○
Omega-3 fatty acids contribute to balancing blood cholesterol levels (4)	○	○
Omega-3 fatty acids in eggs are concentrated in the yolk (5)	○	○
Omega-3 enriched eggs provide about 20 times more omega-3 fatty acids than regular eggs (6)	○	○

Page Break	

D01 Do you buy Omega-3 enriched eggs?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Do you buy Omega-3 enriched eggs? = No

D02 Where do you usually buy Omega 3 - enriched eggs?

- ○ Supermarkets (1)
- ○ Local stores (6)
- ○ Specalized stores (7)
- ○ Others (5) _____

D03 How many Omega-3 enriched eggs your household consume per week?

- ○ Less than one eggs per week. (1)
- ○ 1-4 eggs (2)
- ○ 4-7 (3)
- ○ 7-10 (4)
- ○ 10 or more (5)

DO4 Are Omega-3 enriched eggs available at your local market?

- ○ Yes (1)
- ○ No (4)
- ○ I don't know (5)

Page Break	

End of Block: Behavior in purchasing and consuming Omega 3 eggs

---

Start of Block: Behavior in purchasing eggs

P1 How often do you buy eggs?

- ○ Once a week or often (1)
- ○ 2-3 times per month (2)
- ○ Once a month (3)
- ○ Once in two month (4)
- ○ Several times in year (5)

P2 How many eggs do you usually buy per purchase?

- ○ 1 packaging of 6 eggs (1)
- ○ 1 packaging of 10 eggs (2)
- ○ 1 packaging of 15 eggs (3)
- ○ 2 packaging of 6 eggs (4)
- ○ 2 packaging of 10 eggs (5)

P3 Where do you usually buy eggs? Select all that apply

- ○ Supermarkets (1)
- ○ City markets (Dolac) (8)
- ○ Local stores (9)
- ○ Specialized stores (10)
- ○ Directly from the producers (11)
- ○ Machine with the eggs (12)
- ○ Others (7) _____

P4 How do you usually use eggs in meals preparation/cooking? Select all that apply

- ○ For preparing sweets (e.g. cakes, pancakes, pies) (1)
- ○ For preparing pasta (e.g. gnocchi, tagliatelle) (5)
- ○ For direct consumption (e.g. fried egg, boiled egg, scrambled eggs) (6)
- ○ Others (4) _____

P5 How many eggs does your household consume per week?

- ○ Less than one egg per week (1)
- ○ 1-4 (2)
- ○ 4-7 (3)
- ○ 7-10 (4)
- ○ More than 10 (5)

P6 Do you know what Omega 3 enriched eggs are?

- ○ Yes, please define the term Omega 3 enriched eggs (1)

_____

- ○ No (2)

Page Break	

P7 Definition. Omega Omega-3 enriched eggs are produced by changing the diet of laying hens. The hens are fed a special feed that contains a higher concentration of omega-3 fatty acids. Through the animals' metabolism, the omega-3 fatty acids are absorbed into the composition of the eggs, naturally creating a product rich in this important element for human health.

Page Break	

Hypothetical scenario
Imagine that you are in the grocery store or market to buy eggs. You will soon see 8 different packages of eggs, where you should indicate which product you would like to purchase. Just like in the grocery store and market you can see the price of the packages. You will also see the production type and if the eggs are enhanced with omega-3. There are four different production types: Free range – eggs are produced in a rearing system where laying hens have continuous daytime access to open-air run. Floor rearing – eggs are produced in a rearing system where laying hens are housed in a house on a floor (litter). Cage – eggs are produced in a rearing system where laying hens can move freely between different levels. Organic – eggs come from free range laying hens kept in accordance with organic production standards. The eggs can be enhanced with omega-3. This is indicated as "Enhanced" on the packages, while if it is absent, a "Non enhanced" is indicated. Other than the indicated aspects, the eggs are the same, i.e. they are all produced in Croatia, and all have the same packaging type and include 10 eggs. The price varies between 1.70 EUR/packaging to 5.30 EUR/packaging.

End of Block: Behavior in purchasing eggs

Start of Block: A1

A1 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

○ Image: Slide2 (1)
○ Image: Slide3 (2)
○ Image: Slide4 (3)

End of Block: A1

Start of Block: A2

A2 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

○ Image: Slide6 (1)
○ Image: Slide7 (2)
○ Image: Slide4 (3)

End of Block: A2

Start of Block: A3

A3 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide9 (1)
- ○ Image: Slide10 (2)
- ○ Image: Slide4 (3)

End of Block: A3

Start of Block: A4

A4 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide12 (1)
- ○ Image: Slide13 (4)
- ○ Image: Slide4 (3)

End of Block: A4

Start of Block: A5

A5 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide15 (1)
- ○ Image: Slide16 (2)
- ○ Image: Slide4 (3)

End of Block: A5

Start of Block: A6

A6 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide18 (1)
- ○ Image: Slide19 (2)
- ○ Image: Slide4 (3)

End of Block: A6

Start of Block: A7

A7 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide21 (1)
- ○ Image: Slide22 (4)
- ○ Image: Slide4 (3)

End of Block: A7

Start of Block: A8

A8 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide24 (1)
- ○ Image: Slide25 (2)
- ○ Image: Slide4 (3)

End of Block: A8

Start of Block: B09

B09 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide27 (1)
- ○ Image: Slide28 (2)
- ○ Image: Slide4 (3)

End of Block: B09

Start of Block: B10

B10 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide30 (1)
- ○ Image: Slide31 (2)
- ○ Image: Slide4 (3)

End of Block: B10

Start of Block: B11

B11 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide33 (1)
- ○ Image: Slide34 (2)
- ○ Image: Slide4 (3)

End of Block: B11

Start of Block: B12

B12 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide36 (2)
- ○ Image: Slide37 (1)
- ○ Image: Slide4 (3)

End of Block: B12

Start of Block: B13

B13 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide39 (1)
- ○ Image: Slide40 (2)
- ○ Image: Slide4 (3)

End of Block: B13

Start of Block: B14

B14 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide42 (1)
- ○ Image: Slide43 (2)
- ○ Image: Slide4 (3)

End of Block: B14

Start of Block: B15

B15 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide45 (1)
- ○ Image: Slide46 (2)
- ○ Image: Slide4 (3)

End of Block: B15

Start of Block: B16

B16 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide48 (1)
- ○ Image: Slide49 (2)
- ○ Image: Slide4 (3)

End of Block: B16

Start of Block: C17

C17 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide52 (1)
- ○ Image: Slide53 (2)
- ○ Image: Slide4 (3)

End of Block: C17

Start of Block: C18

C18 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide55 (1)
- ○ Image: Slide56 (2)
- ○ Image: Slide4 (3)

End of Block: C18

Start of Block: C19

C19 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide58 (1)
- ○ Image: Slide59 (2)
- ○ Image: Slide4 (3)

End of Block: C19

Start of Block: C20

C20 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide61 (1)
- ○ Image: Slide62 (2)
- ○ Image: Slide4 (3)

End of Block: C20

Start of Block: C21

C21 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide64 (1)
- ○ Image: Slide65 (2)
- ○ Image: Slide4 (3)

End of Block: C21

Start of Block: C22

C22 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide67 (1)
- ○ Image: Slide68 (2)
- ○ Image: Slide4 (3)

End of Block: C22

Start of Block: C23

C23 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide70 (1)
- ○ Image: Slide71 (2)
- ○ Image: Slide4 (3)

End of Block: C23

Start of Block: C23

C23 Imagine that you are in the grocery store or market to buy eggs. Which of the following three options would you choose?

- ○ Image: Slide73 (1)
- ○ Image: Slide74 (2)
- ○ Image: Slide4 (3)

End of Block: C23

Start of Block: Health belief model

HB1 Please indicate how much you agree or desegree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I am willing to buy Omega - 3 enriched eggs if they were more available on the market (1)	○	○	○	○	○
I intend to buy Omega-3 enriched eggs if they were more available on the market (4)	○	○	○	○	○
I plan to buy Omega-3 enriched eggs if they were more available on the market (5)	○	○	○	○	○
I will try to buy Omega -3 enriched eggs if they were more available on the market (6)	○	○	○	○	○

Page Break	

HB2 Please indicate how much you agree or desegree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Buying Omega-3 enriched eggs for me is time-consuming (1)	○	○	○	○	○
Buying Omega-3 enriched eggs for me is costly (7)	○	○	○	○	○
Buying Omega-3 enriched eggs would require starting a new habit, which is difficult (8)	○	○	○	○	○
I don't know where to buy omega 3 eggs (9)	○	○	○	○	○

Page Break	

HB3 Please indicate how much you agree or desegree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Omega-3 enriched eggs are tastier than non-enriched eggs (1)	○	○	○	○	○
Omega-3 enriched eggs are healthier than non-enriched eggs (2)	○	○	○	○	○
Eating Omega-3 enriched eggs decreases my risk of getting a coronary heart disease and blood vessel disease (3)	○	○	○	○	○

Page Break	

HB4 Please indicate how much you agree or desegree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Buying Omega-3 enriched eggs is easy for me (1)	○	○	○	○	○
Buying Omega-3 enriched eggs is under my control (2)	○	○	○	○	○
I understand the information related to omega 3 eggs on the egg packaging (3)	○	○	○	○	○

HB5 Please indicate how much you agree or disagree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
Nothing is as important as good health (1)	○	○	○	○	○
Having good health is more valuable than money (2)	○	○	○	○	○
I am motivated to use healthy products for good health (3)	○	○	○	○	○

Page Break	

HB6 Please indicate how much you agree or desegree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I feel my chances of getting coronary heart disease in the future are high (1)	○	○	○	○	○
My lifestyle (eating habits, sport) makes me believe that I am not under the risk of getting coronary heart disease (13)	○	○	○	○	○
I think I might die of heart disease (14)	○	○	○	○	○

HB7 Please indicate how much you agree or desegree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
If I get coronary heart disease, it would have a severe negative influence on my quality of life (1)	○	○	○	○	○
If I get coronary heart disease, it would have a negative influence on my social relations (2)	○	○	○	○	○
If I get coronary heart disease, it would have a negative influence on my family relations (3)	○	○	○	○	○

Page Break	

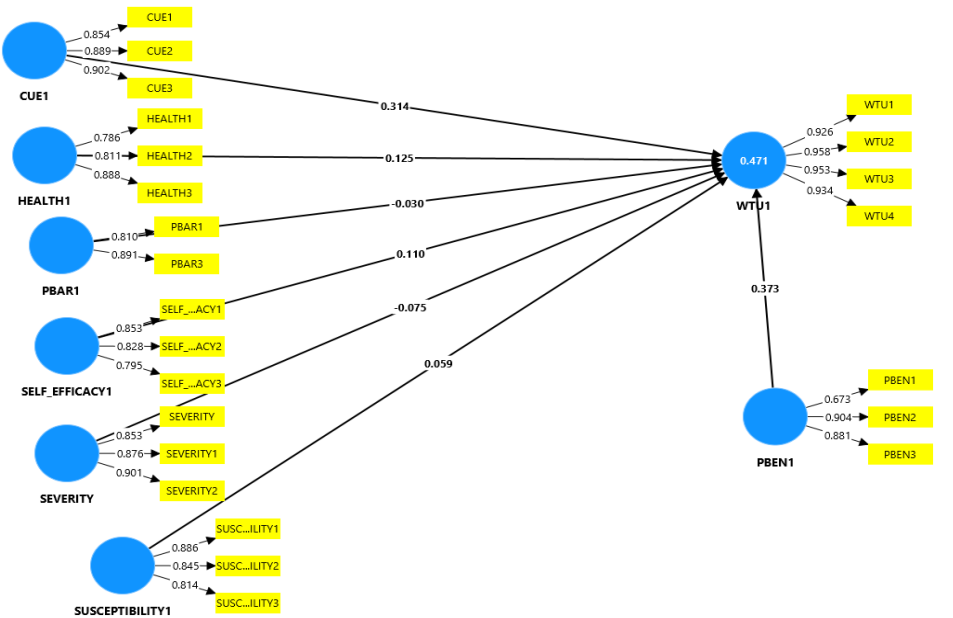
HB8 Please indicate how much you agree or disagree with the following statements:

	Strongly disagree (1)	Disagree (2)	I neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
I would buy more Omega-3 enriched eggs, if recommended by a doctor (1)					
I would buy more Omega-3 enriched eggs, if my friends suggested it (2)					
I would buy more Omega-3 enriched eggs, if my family members suggested it (3)					

End of Block: Health belief model

Appendix B

Smart-PLS results of the research model



Marina Tomić Maksan
Division for Agroeconomy and Informatics, Department of Marketing and Innovation in Agribusiness, University of Zagreb Faculty of Agriculture, Croatia
Svetošimunska 25, 10000 Zagreb, Croatia
Phone: +385 1 239 3787
E-mail: matomic@agr.hr
An assistant professor, holds a Master's degree in Agribusiness and Rural Development (2010) and a PhD in Agricultural Economics (2016). Her research interests relate to the determinants of consumer behaviour. Her current research interests include consumer acceptance of novel and more sustainable foods.

Željka Mesić
Division for Agroeconomy and Informatics, Department of Marketing and Innovation in Agribusiness, University of Zagreb Faculty of Agriculture, Croatia
Svetošimunska 25, 10000 Zagreb, Croatia
Phone: +385 1 239 3641
E-mail: zmesic@agr.hr
Dr. Željka Mesić has been an associate professor at the University of Zagreb, Faculty of Agriculture since 2005. Her work focuses on market analysis, consumer behaviour and supply chain analysis. She has been involved in various professional and research projects dealing with traceability systems and the use of blockchain technology to combat food fraud, experimental economic methods, consumer behaviour and education in the field of agricultural economics.

Branka Šakić Bobić
Division for Agroeconomy and Informatics, Department of Management and Rural Entrepreneurship, University of Zagreb Faculty of Agriculture, Croatia
Svetošimunska 25, 10000 Zagreb, Croatia
Phone: +385 1 239 3763
E-mail: bsakic@agr.hr
Holds a degree in Agricultural Sciences - Agroeconomy (Zagreb, 2004) and got a Doctoral Degree in Agricultural Economics (2013). Researcher at the University of Zagreb Faculty of Agriculture since October 2004 and Associate Professor since March 2021. Current research interests include project and financial management, finances and investments in agriculture, costs and cost calculation, farm management and bioeconomy.

Damir Kovačić
Division for Agroeconomy and Informatics, Department of Marketing and Innovation in Agribusiness, University of Zagreb Faculty of Agriculture, Croatia
Svetošimunska 25, 10000 Zagreb, Croatia
Phone: +385 1 239 3734
E-mail: dkovacic@agr.hr
Full professor, Holds a degree in Agricultural Sciences - Agroeconomy (Zagreb, 1989.), master's degree in economics (Zagreb, 2023) and a PhD in Agricultural Economics (Zagreb, 2004). His scientific interests are focused on the areas of food consumer behavior, distribution of agricultural and food products, and business networking in agriculture.

Andreas C. Drichoutis
Department of Agricultural Economics and Rural Development, Agricultural University of Athens, Greece
Iera Odos 75, Athens, Greece
Tel: +30-2105294781
E-mail: adrihout@aua.gr
Dr. Drichoutis is a Professor of Consumer Behavior. He received his undergraduate diploma in Agricultural Economics in 2002 and a postgraduate degree in Agribusiness Management (MBA) in 2004 from Agricultural University of Athens. In 2004, after spending a semester at Texas A&M University, he continued his studies in AUA pursuing a PhD which he completed in 2008. His research interests include a wide area of topics such as choice under risk, inter-temporal decision making and in general, anything related to preference elicitation. Most of his research applies experimental economics methods to answer questions relevant for agricultural economists and decision scientists.