


## A study of factors influencing consumers' willingness to purchase functional foods (protein enriched milk): The moderating effect of consumer innovativeness

### Tüketicilerin fonksiyonel gıda (proteinli sütler) satın alma istekliliğini etkileyen faktörlerin incelenmesi: Tüketici yenilikçiliğinin düzenleyici etkisi

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#### Abstract

Functional foods are food products that provide new benefits to consumers in addition to nutritional benefits and promote a healthy lifestyle by modifying or enriching the content of various food items. Even though the functional food market is quickly expanding due to its highly dynamic and inventive structure, research on consumer expectations and needs in this subject is still restricted. Accordingly, the purpose of this study is to determine the variables that affect consumers' willingness to purchase functional foods, as well as to examine the moderating effect of consumer innovativeness. Protein-enriched milk products were chosen as the functional food category in the study. The descriptive research approach was employed to reveal the variables' relations. The questionnaire form, which was produced as a result of a literature study to determine the suitable variables and scales, was administered to 420 participants living in Turkey between May and August 2021. The participants were selected using a convenience sampling technique. The Smart PLS 3.3.2 software and least squares path analysis (PLS-SEM) was used to assess the research hypothesis. According to the findings, the propensity to live a healthy lifestyle and consumer innovativeness significantly and positively affect various dimensions of functional food purchase willingness. On the other hand, consumer innovativeness appears to have a moderating effect on the relationship between the propensity to live a healthy lifestyle and the trust in functional food sub-dimensions, as well as the relationship between the propensity to live a healthy lifestyle and the need for functional food sub-dimensions.

**Keywords:** Functional Foods, Protein Enriched Milks, Consumer Innovativeness

**Jel Codes:** M31

#### Öz

Fonksiyonel gıdalar, gıda ürünlerinin çeşitli özelliklerini değiştirerek ya da zenginleştirerek tüketicilere beslenme faydasının ötesinde yeni faydalar sunmayı ve sağlıklı yaşamı desteklemeye çalışan gıda ürünleridir. Fonksiyonel gıda pazarı hızla büyüyen, oldukça dinamik ve yenilikçi bir pazar olmasına rağmen bu alanda tüketici ihtiyaçları ve beklentilerine ilişkin çalışmalar kısıtlı sayıdadır. Bu çalışmanın amacı, tüketicilerin fonksiyonel gıda satın alma istekliliklerini etkileyen faktörleri ortaya koymak ve tüketici yenilikçiliğinin düzenleyici etkisini incelemektir. Araştırmada fonksiyonel gıda kategorisi olarak proteini zenginleştirilmiş süt seçilmiştir. Araştırma, değişkenler arasındaki ilişkileri ortaya çıkarmak amacıyla betimsel araştırma yaklaşımına göre tasarlanmıştır. Literatür taraması ile uygun değişken ve ölçeklerin belirlenmesi sonucunda geliştirilen anket formu, pilot çalışmalar neticesinde Mayıs 2021-Ağustos 2021 tarihleri arasında Türkiye'de yaşayan 420 katılımcı üzerinde uygulanmıştır. Katılımcılar kolayda örnekleme tekniği ile seçilmiştir. Araştırma hipotezlerini test etmek amacıyla Smart PLS 3.3.2 programı kullanılmış ve en küçük kareler yol analizi (PLS-SEM) uygulanmıştır. Analiz sonuçlarına göre sağlıklı yaşam tarzına sahip olma eğiliminin ve tüketici yenilikçiliğinin fonksiyonel gıda satın alma istekliliğine ilişkin bazı boyutlar üzerinde pozitif ve anlamlı etkileri tespit edilmiştir. Öte yandan tüketici yenilikçiliği, sağlıklı yaşam tarzı ile güven alt boyutu arasındaki ilişkide ve sağlıklı yaşam tarzı ile ihtiyaç alt boyutu arasındaki ilişkide düzenleyici bir etkiye sahiptir.

**Anahtar Kelimeler:** Fonksiyonel Gıda, Proteini Zenginleştirilmiş Sütler, Tüketici Yenilikçiliği

**JEL Kodları:** M31

## Introduction

Alongside organic products, the functional food category has emerged as one of the most notable categories in today's consumer food consumption habits. The functional food market, which has been functioning in the food sector since the 1980s, rises by roughly 10% per year with its added benefits in addition to the benefits derived from the nutrients themselves and is a market that has become more significant for food-related companies (Cebeci and Mankan, 2022). The global functional food market is predicted to develop from \$180.58 billion in 2021 to \$191.68 billion in 2022. Furthermore, the market is expected to reach 243.83 billion dollars in 2026 (Functional Foods Global Market Report, 2022). In keeping with the global trend, Turkey's functional food market has been steadily growing since 2015. Turkey had the highest growth rates among all global markets between 2012 and 2017, with a 52 per cent increase in functional food sales volume, from \$303 million to \$461 million (Z Raporu, 2021). This growth enables new inquiries concerning customer attitudes and behaviours toward functional food.

Although the relationship between nutrition and physical health has been known for centuries, the rise in the living standards and the health awareness of modern consumers, as well as the increasing health costs, has meant a growing understanding of the importance of functional foods, leading to a surge in demand to these products (Roberfroid, 2002; Ali and Rahut, 2019). Functional foods or dietary components provide additional benefits to human physiology and metabolism and provide the body's required nutrients, making them beneficial in illness prevention and living a healthy life (Karaduman, 2011). Functional foods resemble traditional foods in appearance and are intended to be consumed as part of a regular diet. Still, they have been changed to perform physiological tasks besides meeting basic nutrient requirements (Frewer, Scholderer and Lambert, 2003).

Designer foods, dietary supplements, and fortified foods are functional foods often high in health-promoting minerals and vitamins. Thus, functional foods provide fundamental nutritional needs (Macaluso et al., 2020; Rajasekaran and Kalaivani, 2020). In addition, they are used for various functions, including weight control, immune and digestive system support, and athlete health, by enhancing the content of numerous food products such as bakery, baby food, dairy products, eggs, and meat.

The primary objective of this study is to examine the factors affecting consumers' willingness to purchase functional foods. For this purpose, protein-enriched milk products were selected in the dairy products category since Gök and Ulu (2018) stated as it is Turkey's most preferred functional food category. Protein-enriched dairy products allow the body to absorb more protein, particularly in sports and activities involving hard exercise. They are accessible to customers from a variety of brands on the market. The functional product industry is innovative and characterized by dynamic growth, and new products are constantly being introduced (Plasek, Lakner, Kasza and Temesi, 2020). Therefore, another purpose of the study is to reveal how innovative tendencies affect consumers' preferences in this relatively new product category. Therefore, the study's findings are expected to contribute to the developing functional food sector by exposing customer preferences.

## Literature review

The literature on functional foods, health awareness, healthy lifestyles, and consumer innovativeness is evaluated in this study section.

### Functional foods

Functional foods are not clearly defined in the literature. Various products are described as functional foods, and some are labelled as nutrients. They reduce the disease risk and have various components that affect various body functions related to well-being and health. Thus, there is no universally accepted simple definition of functional foods. Therefore, functional food should be interpreted as a concept. Moreover, whether it is function-oriented rather than product-oriented, the concept would be universal and would not be influenced by local characteristics or cultural traditions (Williams and Gibson, 2000, p.11).

According to the International Food Information Council (IFIC), functional foods are foods or dietary ingredients that can provide a health benefit beyond basic nutrition. The International Life Sciences Institute of North America (ILSI) defines functional foods as "foods that provide health benefits beyond basic nutrition through physiologically bio-active food ingredients". Health Canada defines functional foods as "similar to a traditional food consumed as part of a normal diet, with seemingly physiological benefits and/or to reduce the risk of chronic disease beyond basic nutritional functions". The Nutrition Business Journal classified functional foods as "foods added to functional levels that enhance health or performance or are fortified with concentrated ingredients. Functional foods include fortified cereals, bread, sports drinks, bars, fortified snacks, baby foods, ready meals, etc. (Howard and Wildman, 2007:

2). Dairy products are one of the important players in the functional food market. For example, it is estimated that approximately 60% of European functional food sales are dairy products (Shortt and O'Brien, 2004, p. 2).

Japan is the birthplace of the term functional food. Furthermore, this country has been at the forefront of the development of functional foods since the early 1980s when comprehensive and large-scale research projects were initiated. Systematic analysis and development of food functions and molecular design of functional foods are funded by the Japanese government (Williams and Gibson, 2000, pp. 11-12). In this regard, Yakult Honsha (founded in 1955) played an important role by developing products based on the probiotic lactic acid bacteria *Lactobacillus casei* Shirota, which is sold as a fermented milk drink in 65 ml bottles. In 1984, the concept of Functional Food was first promoted by Japanese scientists who studied the relationships between nutrition, sensory satisfaction, enhancement, and modulation of physiological systems. In 1991, the Ministry of Health introduced rules to approve a particular category of health-related food called FOSHU (food for specified health uses) (Menrad, 2003, pp. 181-182).

Functional food products are not distributed homogeneously across all food and beverage segments. Instead, these products are mainly used in the milk, confectionery, soft drinks, bakery, and baby food market (Siro, Kápolna, Kápolna and Lugasi, 2008, p. 459).

Health and well-being have become a growing trend in modern nutrition culture. Health was one of the key themes of the presentation about the changing habits of consumers by Larry Hasson, general manager of the International Social Change Research Institute (RISC), at the European Food Seminar in 1999. The main trends identified by RISC for food are pleasure, quality (especially for people aged over 50), innovation, compulsion (associated with young and masculine logic), continuity (the number of product supporters increases with age, especially after 50) and health. Health trends consist of five main consumer concerns. These are expertise, morals, caring, compensation, and restriction (Heasman and Mellentin, 2001, pp. 18-21).

According to Urala and Lähteenmäki (2007), the consumers' attitudes towards functional foods were divided into four dimensions and revealed that they were willing to use them. This study helped clarify the dimensions of the consumer approach, such as the perceived reward from using functional foods, the necessity felt for them, customer confidence and the safety of the food products (Urala and Lähteenmäki, 2007, p. 6).

A study conducted in Turkey in 2014 showed that women were more aware of functional foods than men. Furthermore, older participants became more aware of functional foods than younger participants. This study demonstrates that demographic features influence consumers' interest in functional foods (Büyükkaragöz, Bas, Sağlam and Cengiz, 2014, p. 628). However, consumers are distinguished by a strong information asymmetry that assigns functional food to the reliability category because, most often, consumers cannot verify their claims even after consumption (Di Pasquale, Adinolfi and Capitanio, 2011, p. 181).

### **Health consciousness**

Health awareness is a concept that reflects people's readiness to do more for their health (Kaynak and Ekşi, 2014). According to Schifferstein and Ophuis (1998), health awareness evaluates the degree of readiness to perform health actions. Gould (1990) explains health consciousness as an intrinsic state of self-interest in self-related cues reflected in cognition and somatic emotion of how much a person contributes to their health.

The idea that one's lifestyle will affect longevity is firmly entrenched in the Western value system. Most theoretical models of health behaviour begin with the assumption that the individual is motivated to prevent disease or improve health. Awareness of information, skills, self-efficacy beliefs and real or perceived barriers are also important. However, health-related motivation is recognized as the primary reason for a healthy lifestyle (Newsom, McFarland, Kaplan, Huguët and Zani, 2005).

### **Healthy lifestyle**

Lifestyle is a set of optional activities that are a regular part of an individual's daily life. Although the term healthy lifestyle is frequently used in everyday speech and public media, its use in scientific discourse is far from consistent. It has been described in various ways in the literature, from avoiding bad health habits to all behaviours that impact health status (Berger and Walker, 1997, p. 402).

Bloch (1984) defined a healthy lifestyle as preventing health problems and maximizing personal well-being (cited in Divine and Lepistö, 2005, p.275). A healthy lifestyle emphasizes health-related physical activities such as natural food consumption, health care, and life balance. However, due to the

increasing income and busy lifestyle, people change their eating habits to protect their health. For this purpose, functional foods appear to support consumers to lead healthier life (Gil, Gracia and Sanchez, 2000, p. 212).

Dean et al. (2012) showed that the self-appropriateness of health problems strongly affects the willingness to purchase functional food and the perception of the benefits of these products. Especially when detailed information is given about the claim, function, and health consequences of the product and when the person promises a targeted risk reduction in the issues that the person finds relevant, the willingness for functional food consumption increases (Dean et al., 2012, p. 135).

The results of Niva's (2007) focus groups show that functional food consumers report their disease experiences among family and friends, and these reports increase awareness of risk factors for diseases.

According to Chen (2011), functional foods marketed with promises to promote health or reduce disease risk provide a promising way for consumers to lead healthier lives. However, the research revealed that the joint moderation of health awareness and healthy lifestyle influences consumers' willingness to consume functional foods (Chen, 2011, p. 253).

According to Urala and Lähteenmäki (2003), motives related to well-being and disease prevention encourage the choice of functional foods (Urala and Lähteenmäki, 2003: 153). Likewise, Verbeke (2005) argues that the verification of the health benefits of functional foods and the presence of a sick person in the family affect the acceptance of functional foods more than other important factors (Verbeke, 2005, p. 54).

### **Consumer innovativeness**

When the current literature is reviewed, the consumer's innovativeness is defined as the desire to be stimulated by new products and seek innovation (Hirschman, 1980; Midgley and Dowling, 1978).

Rogers and Shoemaker (1971) define innovativeness as "the degree to which an individual is relatively early to adopt an innovation compared to other members of the system". According to Rogers and Shoemaker (1971), it is meant to be earlier in actual adoption time rather than perceiving whether the individual adopts innovation earlier than others in his system. This is essentially an operational definition. Because it is directly expressed in terms of the measurement of innovativeness, that is, the time it takes for an individual to adopt (Midgley and Dowling, 1978).

Studies in the literature emphasize that innovativeness consists of two dimensions, cognitive and sensory. In the sensory dimension, consumers can be innovative due to an above-average optimal arousal level generated through diversity-seeking behaviour or new product discovery. Cognitively, innovativeness may manifest with increased knowledge gathering or product participation (Cotte and Wood, 2004).

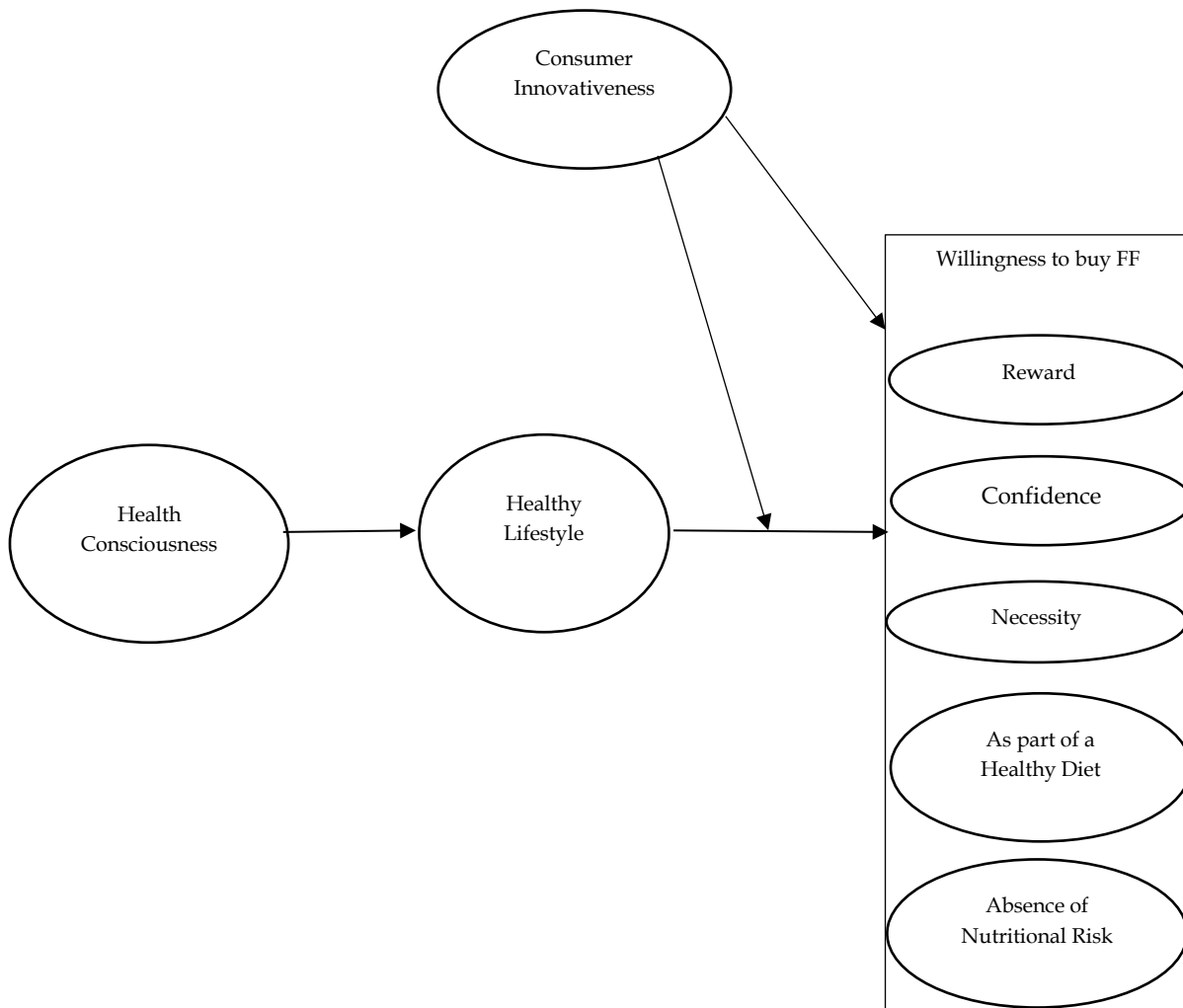
### **Method**

This study aims to reveal the factors affecting consumers' willingness to buy functional food and examine the moderator effect of consumer innovativeness. The study used the descriptive research approach to reveal the variables' relationships. The research sample consists of consumers living in Turkey who have used at least once the products in the protein milk functional food category, determined by convenience sampling method. An online survey, one of the quantitative data collection tools, was applied to reach these consumers.

The questionnaire form, developed as a result of determining the appropriate variables and scales with the literature review, was applied as a pilot on a sample of 50 people after receiving expert opinions. After the pilot study, necessary changes were made, and the questionnaire was finalized. The final form was presented to the respondents living in Turkey between May 2021-August 2021. Respondents were selected via the convenience sampling method. The final questionnaire form was applied to 448 participants. However, 420 questionnaires were included in the analysis because of the evaluations made on control questions, conformity to a normal distribution, skewness/kurtosis, and extreme values. The healthy lifestyle scale was adapted from the scale developed by Gil et al. (2000), and the health awareness scale was adapted from the scale developed by Michaelidou and Hassan (2008). Moreover, the functional food willingness scale was adapted from the scale developed by Urala and Lähteenmäki (2007) and the consumer innovativeness scale from Goldsmith and Hofacker (1991).

### **Research questions and hypothesis**

The studies on the subject in the literature have been comprehensively examined, and the research model created for the research is shown in Figure 1.



**Figure 1:** Research Model

The hypothesis of the research is as follows:

H<sub>1</sub>: Health consciousness has a positive effect on a healthy lifestyle.

H<sub>2</sub>: Healthy lifestyle has a positive effect on the reward.

H<sub>3</sub>: Healthy lifestyle has a positive effect on confidence.

H<sub>4</sub>: Healthy lifestyle has a positive effect on necessity.

H<sub>5</sub>: Healthy lifestyle positively affects the part of the healthy diet variable.

H<sub>6</sub>: Healthy lifestyle positively affects the absence of nutritional risk variables.

H<sub>7</sub>: Consumer innovativeness has a positive effect on the reward.

H<sub>8</sub>: Consumer innovativeness has a positive effect on confidence.

H<sub>9</sub>: Consumer innovativeness has a positive effect on necessity.

H<sub>10</sub>: Consumer innovativeness positively affects the part of the healthy diet variable.

H<sub>11</sub>: Consumer innovativeness positively affects the absence of nutritional risk variables.

H<sub>12</sub>: Consumer innovativeness has a moderating role in the relationship between a healthy lifestyle and reward.

H<sub>13</sub>: Consumer innovativeness has a moderating role in the relationship between a healthy lifestyle and confidence.

H<sub>14</sub>: Consumer innovativeness has a moderating role in the relationship between a healthy lifestyle and necessity.

H<sub>15</sub>: Consumer innovativeness has a moderating role in the relationship between a healthy lifestyle and part of a healthy diet.

H<sub>16</sub>: Consumer innovativeness has a moderating role in the relationship between a healthy lifestyle and the absence of nutritional risk.

H<sub>17</sub>: Health consciousness indirectly affects reward through a healthy lifestyle.

H<sub>18</sub>: Health consciousness indirectly affects confidence through a healthy lifestyle.

H<sub>19</sub>: Health consciousness indirectly affects necessity through a healthy lifestyle.

H<sub>20</sub>: Health consciousness indirectly affects a part of a healthy diet through a healthy lifestyle.

H<sub>21</sub>: Health consciousness indirectly affects the absence of nutritional risk through a healthy lifestyle.

## Findings

### Descriptive statistics

Data on the demographic characteristics of the respondent participating in the study are shown in Table 1.

**Table 1:** Descriptive Statistics of Respondents

Descriptive Statistics		Frequency	Per cent
Gender	Male	206	49.1
	Female	214	50.9
Age	18 years and younger	40	9.6
	19 - 24 years old	183	43.6
	25-29 years old	110	26.1
	30-39 years old	59	14.1
	40-49 years old	16	3.8
	50 years and older	12	2.8

The study's sample includes 214 women and 206 men. In addition, the sample was comprised of 40 respondents aged 18 and under, 183 respondents between the ages 19-24, 110 respondents between the ages 25-29, 59 respondents between the ages 30-39, 16 respondents between the ages 40-49, and 12 respondents age of 50 and above.

The Distribution of the Most Preferred Protein Milk Brands is given in Table 2.

**Table 2:** Distribution of the Most Preferred Protein Milk Brands

Distribution of the Most Preferred Protein Milk Brands		
	Frequency	Per cent
Pınar Proteinli Süt	164	39.1
İçim Fit	134	31.9
Whey Protein	40	9.6
Sek Protein	27	6.4
Danone Pro	22	5.2
Bim Vip Protein	17	4
Others	16	3.8

The top three protein milk brands most preferred by the participants are "Pınar Proteinli Süt", "İçim Fit" and "Whey Protein" respectively. These brands are followed by "Sek Protein", "Danone Pro", "Bim Vip Protein". Sixteen of the participants stated that they prefer different brands.

### Validity and reliability analysis of scales

Internal consistency reliability, convergent validity and discriminant validity were evaluated in the view of validity and reliability analysis carried out following the research.

Cronbach's Alpha and CR=Composite Reliability coefficients were examined for internal consistency reliability. Factor loadings and explained average variance (AVE=Average Variance Extracted) values were used to determine convergent validity. Factor loadings are expected to be  $\geq 0.70$  for Cronbach Alpha;  $\geq 0.70$  for combined reliability coefficients;  $\geq 0.50$  for the mean-variance explained (Hair, William, Barry and Anderson, 2006; Hair, Sarstedt, Hopkins and Kuppelwieser, 2014; Fornell and Larcker, 1981). The results regarding the internal consistency reliability and convergent validity of the constructs are given in Table 3.

**Table 3:** Reliability and Validity Results of Confirmatory Factor Analysis

Variable	Item	Factor Loadings	Cronbach's Alpha	CR	AVE
Health Consciousness	HC1	0,785	0,909	0,930	0,688
	HC2	0,856			
	HC3	0,833			
	HC4	0,852			
	HC5	0,850			
	HC6	0,796			
Healthy Lifestyle	HL1	0,651	0,793	0,856	0,544
	HL2	0,711			
	HL3	0,716			
	HL4	0,815			
	HL5	0,785			
Consumer Innovativeness	CI1	0,844	0,912	0,932	0,698
	CI2	0,874			
	CI3	0,694			
	CI4	0,859			
	CI5	0,838			
	CI6	0,890			
Reward	REW1	0,810	0,897	0,921	0,627
	REW2	0,837			
	REW3	0,858			
	REW4	0,882			
	REW5	0,823			
	REW6	0,718			
	REW7	0,572			
Confidence	CON1	0,837	0,920	0,938	0,715
	CON2	0,840			
	CON3	0,888			
	CON4	0,880			
	CON5	0,838			
	CON6	0,787			
Necessity	NEC1	0,868	0,879	0,916	0,732
	NEC2	0,871			
	NEC3	0,802			
	NEC4	0,879			
As Part of a Healthy Diet	PHD1	0,842	0,884	0,919	0,740
	PHD2	0,830			
	PHD3	0,898			
	PHD4	0,869			
Absence of Nutritional Risk	ANR1	0,932	0,789	0,863	0,679
	ANR2	0,774			

As a result of confirmatory factor analysis, 20 items were excluded from the analysis because their factor loads were weak. In addition, since the factor loads of all items representing the two dependent variables (taste and drug) were weak, these two dependent variables were excluded from the research model, and the analyses proceeded with the remaining items and variables.

As a result of the analysis, the internal consistency reliability of the structures was ensured because Cronbach's Alpha coefficients were between 0.789 and 0.920 and the CR coefficients were between 0.856 and 0.938. Since the AVE values are between 0.544 and 0.740, it is observed that convergent validity is provided. Factor loads of the variables were found to be between 0.572 and 0.932.

While determining convergent validity, the criteria proposed by Fornell and Larcker (1981) and Henseler, Ringle and Sarstedt (2015) HTMT (Heterotrait-Monotrait Ratio) criterion were used. According to Fornell and Larcker's (1981) criteria, the square root of the mean explained variance (AVE) values of the structures should be higher than the correlations between the structures. Table 4 contains the analysis result concerning the Fornell and Larcker (1981) criterion.

**Table 4:** Convergent Validity Results

Variables	1	2	3	4	5	6	7	8
1- Absence of nutritional risk	(0,824)							
2- Confidence	0,072	(0,846)						
3- Health Consciousness	0,180	0,360	(0,829)					
4- As part of a healthy diet	0,214	0,531	0,197	(0,860)				
5- Healthy Lifestyle	0,167	0,336	0,620	0,205	(0,738)			
6- Consumer Innovativeness	0,008	0,294	0,077	0,330	0,029	(0,836)		
7- Reward	0,010	0,667	0,281	0,488	0,294	0,322	(0,792)	
8- Necessity	0,051	0,755	0,341	0,614	0,304	0,302	0,713	(0,856)

Note: The values in parentheses are the square root values of the AVE.

As seen in Table 4, the average explained variance value square root of each structure is higher than the correlation of the structure with other structures.

According to Henseler et al. (2015), HTMT expresses the ratio of the mean of the correlations of the expressions of all the variables in the study (the heterotrait-heteromethod correlations) to the geometric mean of the correlations of the expressions of the same variable (the monotrait-heteromethod correlations). Table 5 demonstrates the HTMT values of the discriminant validity results.

**Table 5:** Convergent Validity Results

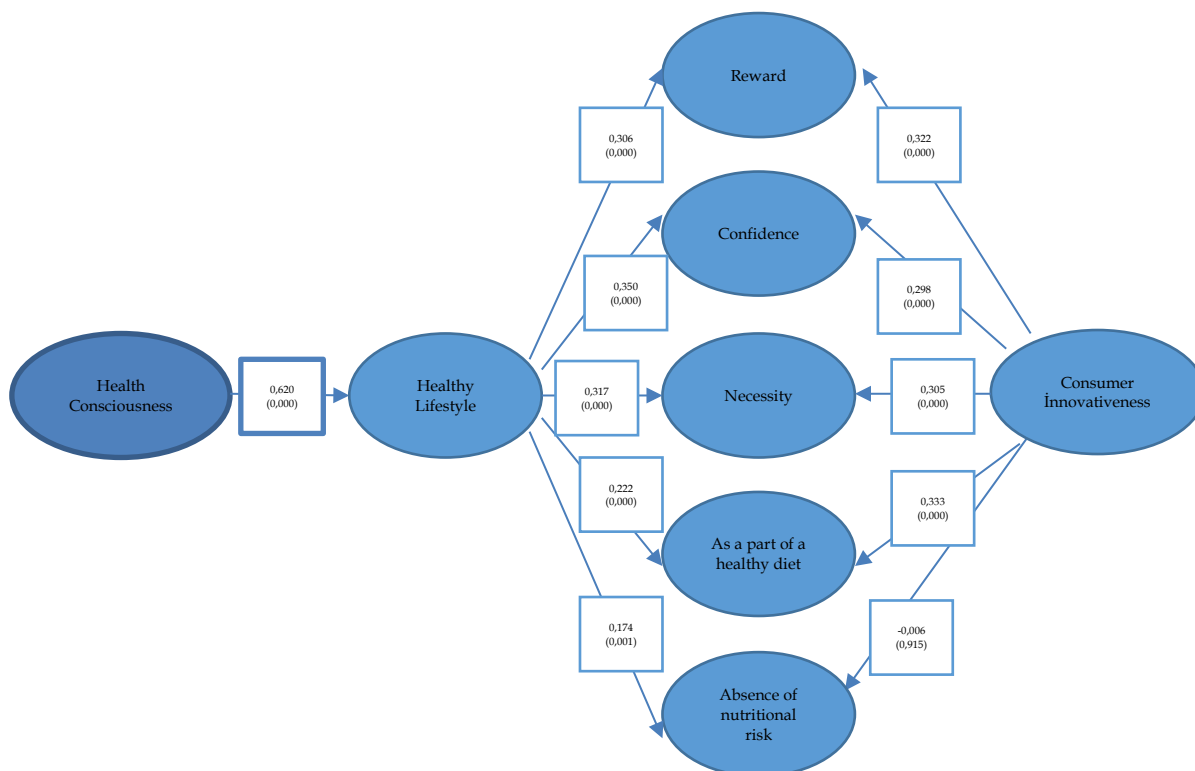
Variables	1	2	3	4	5	6	7	8
1- Absence of nutritional risk								
2- Confidence	0,136							
3- Health Consciousness	0,208	0,387						
4- As part of a healthy diet	0,244	0,574	0,209					
5- Healthy Lifestyle	0,186	0,381	0,707	0,243				
6- Consumer Innovativeness	0,041	0,320	0,088	0,363	0,099			
7- Reward	0,079	0,730	0,296	0,536	0,331	0,353		
8- Necessity	0,103	0,809	0,365	0,684	0,339	0,331	0,802	

Henseler et al. (2015) HTMT value should be below 0.90. If the contents of the concepts are far from each other, the HTMT value should be below 0.85. As seen in Table 5, HTMT values are below the threshold value. According to data in Table 4 and Table 5, it can be said that discriminant validity was achieved. When the findings of the analyses were examined, it was seen that all values were within the required ranges, and the research model was determined to be valid and reliable.

### The testing of the research model and the results

The structural equation model developed to test the hypothesis of the research is shown in Figure 2.





**Figure 2:** Structural Equation Model

The research model was analysed by least squares path analysis (PLS-SEM). SmartPLS 3.3.2 statistics program was used in the implementation of the method. In order to determine whether there are any problems with the research model, linearity, path coefficients,  $R^2$ , effect size ( $f^2$ ) and predictive power ( $Q^2$ ) were analysed. Linearity, path coefficients,  $R^2$  and  $f^2$  values with PLS algorithm;  $Q^2$  (predictive power) value was obtained by Blindfolding analysis. In order to evaluate the significance levels of the PLS path coefficients, t-values were calculated by taking 5000 subsamples from the sample with bootstrapping (Bozoklu and Yıldız, 2019, p. 41).  $R^2$ ,  $f^2$ ,  $Q^2$  and VIF values are given in Table 6.

VIF (Variance Inflation Factor) values between the variables are below 5 (threshold value). For this reason, it can be said that there is no linearity problem between the variables (Hair et al., 2014).

It was determined that health awareness affects healthy lifestyle ( $\beta=0.620$ ;  $p<0.01$ ); healthy lifestyle affects reward ( $\beta=0.304$ ;  $p<0.01$ ); consumer innovativeness affects reward ( $\beta=0.330$ ;  $p<0.01$ ); healthy lifestyle affects trust ( $\beta=0.345$ ;  $p<0.01$ ); consumer innovativeness affects confidence ( $\beta=0.304$ ;  $p<0.01$ ); healthy lifestyle affects necessity ( $\beta=0.313$ ;  $p<0.01$ ). Furthermore, consumer innovativeness affects necessity ( $\beta=0.311$ ;  $p<0.01$ ); healthy lifestyle affects the part of the healthy diet variable ( $\beta=0.215$ ;  $p<0.01$ ); consumer innovativeness affects the part of the healthy diet variable ( $\beta=0.336$ ;  $p<0.01$ ); healthy lifestyle affects the variable of the absence of nutritional risk ( $\beta=0.167$ ;  $p<0.01$ ).

As a result of these findings, the hypothesis 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 of the research were accepted. However, it was determined that consumer innovativeness did not affect the absence of nutritional risk variable ( $\beta= -0.003$ ;  $p>0.05$ ). Therefore, hypothesis 11 was rejected.

According to  $R^2$  values, the explanation ratios obtained are as follows: a healthy lifestyle is 38.4%; the reward is 19.6%; the confidence is 20.5%; the need is 18.9%; part of a healthy diet variable is 15.5%; the absence of nutritional risk variable is 2.8%.

**Table 6:** Direct Effects

Variables	Standardized $\beta$	Standard Error	T value	P	VIF	R2	$f^2$	$Q^2$
Health Awareness -> Healthy Lifestyle	0,620	0,032	19,172	0,000	1,000	0,384	0,624	0,203
Healthy Lifestyle -> Reward	0,304	0,050	6,123	0,000	1,001	0,196	0,114	0,112
Consumer Innovativeness -> Reward	0,330	0,047	7,086	0,000	1,001		0,136	
Healthy Lifestyle -> Confidence	0,345	0,043	7,997	0,000	1,001	0,205	0,150	0,142
Consumer Innovativeness -> Confidence	0,304	0,045	6,789	0,000	1,001		0,116	
Healthy Lifestyle -> Necessity	0,313	0,045	6,900	0,000	1,001	0,189	0,120	0,129
Consumer Innovativeness -> Necessity	0,311	0,045	6,879	0,000	1,001		0,119	
Healthy Lifestyle -> As part of a healthy diet	0,215	0,048	4,513	0,000	1,001	0,155	0,055	0,108
Consumer Innovativeness -> As part of a healthy diet	0,336	0,048	7,035	0,000	1,001		0,134	
Healthy Lifestyle -> Absence of Nutritional Risk	0,167	0,054	3,095	0,002	1,001	0,028	0,029	0,009
Consumer Innovativeness -> Absence of Nutritional Risk	-0,003	0,058	0,051	0,960	1,001		0,000	

If the effect size coefficient ( $f^2$ ) is 0.02 and above, it is weak; 0.15 and above is medium; 0.35 and above is considered high (Cohen, 1988; cited in Bozoklu and Yıldız, 2019, p. 41). According to Sarstedt, Ringle and Hair (2017), there is no effect when the coefficient is below 0.02.

When the effect size coefficients ( $f^2$ ) are examined; it is obtained that health awareness has a high level of effect size of (0.62) on healthy lifestyle; moderate effect size on healthy lifestyle (0,15) on confidence; weak level of effect size of healthy lifestyle (0.11) on reward; weak level of effect size of consumer innovativeness (0.13) on reward; weak level of effect size of consumer innovativeness (0.11) on trust; weak level of effect size of healthy lifestyle (0,12) on need; weak level of effect size of consumer innovativeness (0.12) on need; weak level of effect size of healthy lifestyle (0.05) on the part of healthy diet variable; weak level of effect size of consumer innovativeness (0.13) on the part of healthy diet variable; weak level of effect size of healthy lifestyle (0.03) on the variable of absence of nutritional risk. In addition, consumer innovativeness (0.00) doesn't affect the nutritional risk variable.

The research model can predict endogenous variables when the predictive power coefficients  $Q^2$  calculated for endogenous variables are greater than zero (Hair et al., 2014, cited in Bozoklu and Yıldız, 2019, p. 41). Because the  $Q^2$  values in the table are greater than zero, the research model can explain the endogenous variables (healthy lifestyle, reward, trust, need, part of a healthy diet and lack of nutritional risk).

The results of the moderator effects of the research are given in Table 7.

**Table 7:** Results of Moderator Effects

Path	$\beta$	t	p	Hypothesis	Result
HL X CI $\longrightarrow$ REW	0,123	0,978	0,328	H12	Not supported
HL X CI $\longrightarrow$ CON	0,180	4,413	0,000	H13	Supported
HL X CI $\longrightarrow$ NEC	0,173	3,961	0,000	H14	Supported
HL X CI $\longrightarrow$ PHD	0,134	1,054	0,292	H15	Not supported
HL X CI $\longrightarrow$ ANR	0,134	0,885	0,376	H16	Not supported

HL: Healthy Lifestyle, CI: Consumer Innovativeness, REW: Reward, CON: Confidence, NEC: Necessity, ANR: Absence of nutritional risk, PHD: As part of a healthy diet

According to the moderating effect analysis, consumer innovativeness has a moderating effect on the relationship between a healthy lifestyle and trust ( $\beta=0.180$ ;  $p<0.01$ ) and between a healthy lifestyle and need variables ( $\beta=0.173$ ;  $p<0.01$ ).

Therefore, hypotheses 13 and 14 were accepted. In addition, it was determined that consumer innovativeness did not have a moderating effect on the relationships between a healthy lifestyle and reward ( $\beta=0.123$ ;  $p>0.05$ ), between a healthy lifestyle and a part of a healthy diet ( $\beta=0.134$ ;  $p>0.05$ ), healthy lifestyle and absence of nutritional risk ( $\beta=0.134$ ;  $p>0.05$ ). Therefore, the study's hypotheses 12, 15 and 16 were not supported statistically.

The results of the indirect effects of the research are given in Table 8.

**Table 8:** Results for Indirect Effects

<i>Variables</i>	<i>Standardized <math>\beta</math></i>	<i>Standard Error</i>	<i>t value</i>	<i>p</i>
<i>Health Consciousness -&gt; Healthy Lifestyle -&gt; Absence of nutritional risk</i>	0,103	0,035	2,999	0,003
<i>Health Consciousness -&gt; Healthy Lifestyle -&gt; Confidence</i>	0,214	0,032	6,763	0,000
<i>Health Consciousness -&gt; Healthy Lifestyle -&gt; As part of a healthy diet</i>	0,133	0,032	4,173	0,000
<i>Health Consciousness -&gt; Healthy Lifestyle -&gt; Reward</i>	0,188	0,033	5,651	0,000
<i>Health Consciousness -&gt; Healthy Lifestyle -&gt; Necessity</i>	0,194	0,032	5,964	0,000

When the values in the table are examined, health awareness affects the absence of nutritional risk ( $\beta=0.103$ ;  $p<0.01$ ); confidence ( $\beta=0.214$ ;  $p<0.01$ ); part of a healthy diet ( $\beta=0.133$ ;  $p<0.01$ ); reward ( $\beta=0.188$ ;  $p<0.01$ ) and necessity ( $\beta=0.194$ ;  $p<0.01$ ) variables over healthy lifestyle. Therefore, hypotheses 17, 18, 19, 20 and 21 were accepted. According to the results of all the analyses, hypotheses 11, 12, 15 and 16 of the research were rejected, and all the remaining hypotheses were accepted.

## Conclusion and discussion

Considering that functional food products are designed to perform certain tasks beyond the basic nutritional function, it can be said that they have a special place among all food categories. This distinguishing feature is described by Di Pasquale et al. (2011), and Urala and Lähteenmäki (2007) put functional foods in a more sensitive position compared to other food products in the eye of the consumer, especially in terms of food safety and reliability. At the same time, as Chen (2011) emphasizes, it can also be perceived as a nutritional preference in the context of a healthy lifestyle.

On the other hand, functional food products are relatively new for consumers. Therefore, consumers with a high tendency towards innovation are likelier to try new and different products, follow the updates and go beyond their current consumption habits (Chen, 2014; Steenkamp, Hofstede and Wedel, 1999).

This study had two purposes. These were to examine the factors that affect consumers' willingness to purchase functional foods and to reveal how consumer innovativeness affects consumers' preferences. Accordingly, based on the relevant literature, some factors that may have a direct and indirect effect on the preference for protein milk as a functional food product were examined. While analyzing the research model, least squares path analysis (PLS-SEM) was used. According to the analysis findings on direct effects, Chen (2009; 2011) stated that health awareness strongly affects a healthy lifestyle. On the other hand, in parallel with the studies of Downes (2008) and Küster-Boluda and Vidal-Capilla (2017), it was determined that the tendency to have a healthy lifestyle has positive effects on the willingness to buy functional foods.

When examined in detail, it is seen that healthy lifestyle tendency has a moderate effect on trust, one of the dimensions of willingness to buy functional food. However, it has a weak effect on the reward dimension, a weak effect on the necessity dimension, a weak effect on the functional food as a part of a healthy diet dimension, and a weak effect on the absence of the nutritional risk dimension.

Consumer innovativeness tendency has low intensity but significant positive effects on reward, trust, need and a part of a healthy diet, which are the dimensions of functional food purchase willingness. The relationship between innovativeness and functional food purchasing tendencies is compatible with

the findings of studies conducted by Saher, Arvola, Lindeman and Lähteenmäki (2004) and Özkan, Yücel and Yücel (2018).

According to the findings, consumer innovativeness moderates the relationship between a healthy lifestyle and trust variables. In addition, it moderates the relationship between a healthy lifestyle and the necessity sub-dimension. Furthermore, consumer innovativeness has not been found to have a moderating effect on the relationships between the healthy lifestyle and reward sub-dimension, between a healthy lifestyle and as part of a healthy diet sub-dimension, and between the healthy lifestyle and absence of nutritional risk sub-dimension.

Finally, when the indirect effects are examined, it has been determined that health consciousness affects the absence of nutritional risk and trust as part of a healthy diet, reward, and necessity variables through a healthy lifestyle.

### **Limitations and recommendations for future research**

There are two limitations to the study's design and implementation. The first is about the scope of the research question. Within the scope of the study, only one product category was examined. However, as stated previously, dairy products are Turkey's most consumed product category. In this context, it is expected that the data gathered within the scope of this product category will be more reliable in consumer behaviour. Second, the sampling method employed can be viewed as a limitation. In order to reduce the disadvantages of the limitation imposed by the non-random sampling method, the sample was constructed using a criterion, and the balanced distribution of demographic attributes was given special consideration.

Further studies focusing on a specific brand and using different functional foods with probiotic and diabetic properties, baby foods etc., selecting samples with demographic characteristics such as age difference, gender, and income status will contribute to a better understanding of the factors influencing functional food preferences. Furthermore, it is important to evaluate the mediating effects of different variables.

This study has implications for practitioners, as well. One of the study's most important findings is the correlation between health awareness, the tendency to have a healthy lifestyle, and the willingness to purchase functional foods. In this context, it is considered that emphasizing the health benefits of these products, particularly in marketing communication efforts promoting protein-enriched dairy products, may be effective in influencing the targeted consumer groups. Furthermore, the effect of consumer innovativeness highlights the need for companies to create new and unique products in the sector consistently.

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