

**THESES OF THE DOCTORAL (PhD) DISSERTATION**  
**CONSUMER ATTITUDES, MOTIVATIONS AND BARRIERS OF**  
**HEALTH BEHAVIOR IN THE FUNCTIONAL FOOD MARKET**

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## **1. BACKGROUND, OBJECTIVES AND HYPOTHESES OF THE RESEARCH**

In the second half of the last century, as a result of rapid technological development and social changes, the prevalence of diseases related to lifestyle and nutrition began to increase drastically (first in developed countries, and later worldwide), which appears as an ever-increasing burden at individual, social and economic levels. However, medical and nutrition-physiological research highlighted, in addition to the disease-preventive nature of healthy nutrition, its effective therapeutic role in obesity, high blood pressure, diabetes, cardiovascular and digestive diseases, as well as many cancers. As a result, more and more of the population of developed countries are becoming aware that a significant proportion of diseases can be prevented and health status can be greatly improved with health-conscious eating. Due to the change in social values and in consumer attitudes, the food industry companies have set themselves the goal of developing and bringing to the market foods that have health-protective effects, so that their consumption can prevent the development of civilization diseases or improve their course. Such products are called functional foods in the international scientific literature.

Companies producing functional foods must constantly keep in mind the changes in behavior, attitudes and needs of consumers in order to succeed in the market. For this, it is essential to analyze the segments created based on the attitude of functional foods. This is the only way to develop a suitable product and apply a suitable marketing strategy, which can be used to increase consumer satisfaction and at the same time reduce the health risk arising from nutrition.

Examining this topic is not only important from the perspective of the food industry, but also from the point of view of the government, as a quarter of all deaths in Hungary in 2019 can be considered to be of nutritional origin, which exceeds the EU average (17%). In the European Union, after Malta, Hungary ranks second in the obesity ranking. In 2012, the cost of treating chronic diseases caused by an unhealthy diet and lifestyle in Hungary was nearly HUF 207 billion, which was 11.6% of the expenses of the entire Health Insurance Fund. That is why it is also important to assess where the population is in terms of the evolution of health behavior, what the consumers' attitude towards functional foods is, and what information sources they get information from and which they consider authentic. On

the basis of all this information, it is only possible to effectively develop communication plans on the subject.

I first started my research by studying the domestic and international literature, during which I got a comprehensive picture of the importance of a healthy lifestyle and nutrition, the market situation/consumer attitude of functional foods and probiotic dairy products, and consumer models related to the purchase and consumption of food.

The focus of my focus group study was the domestic adaptation of a complex attitude and health motivation model, which served as the basis for a representative survey of 1,000 people in Hungary. The purpose of my focus group research was therefore to map and understand consumers' motivations and obstacles related to health behavior, and to explore attitudes and consumer values towards functional foods.

Since the use of online social networking sites has become common and widespread these days, the Internet is considered an important source of information when investigating consumer habits. Therefore, I conducted netnographic research in order to identify groups that can be separated on the basis of the attitudes and motivations of the commenters regarding the consumption of functional foods on online platforms, with a special emphasis on probiotic dairy products. Based on all this, I formed groups based on consumer activity and online attachment.

In the last stage of the research, we conducted a representative questionnaire survey of 1,000 people, on the basis of which I determined the consumption frequency of each functional food, revealed the authentic sources of information that consumers use, and performed segmentation based on consumer attitudes towards functional food. Also, I tried to carry out the domestic adaptation of a complex attitude and health motivation model.

Based on the results of the above tests, I finalized the test model and formulated proposals related to the individual objectives and hypotheses.

### **The most important objectives of the research:**

**C1:** Determining the consumer value of functional foods - creation of the hierarchical value map (primary - focus group interview).

**C2:** Online Hungarian consumer opinions and expectations of probiotic dairy products (primary - netnographic research).

**C3:** Mapping the motivational background of consumers of online Hungarian probiotic dairy products (primary - netnographic research).

**C4:** Grouping of online Hungarian consumers based on their attitude towards probiotic dairy products (primary – netnographic research).

**C5:** Grouping online Hungarian comments about probiotic yogurt based on consumer activity and online attachment (primary - netnographic research).

**C6:** Segmentation of the domestic population based on consumer attitudes towards functional food and its analysis (primary - questionnaire survey survey).

### **1.1. Hypotheses of the research**

**H<sub>01</sub>:** The elements of the correlation matrix of the variables of motivations and obstacles related to health behavior deviate from zero only by chance, so the variables do not correlate with each other, therefore factor analysis cannot be performed (primary - questionnaire survey).

**H<sub>02</sub>:** The elements outside the main diagonal of the correlation matrix of the variables of consumer attitudes towards functional foods deviate from zero only by chance, so the variables do not correlate with each other, therefore it is not possible to perform a factor analysis (primary - questionnaire survey).

**H<sub>1</sub>:** On the basis of consumer attitudes towards functional/health-protective foods, clearly distinguishable groups/segments can be created (primary – questionnaire survey).

**H<sub>2</sub>:** Attitudinal factors towards functional foods have a positive effect on the willingness to buy functional foods (primary - questionnaire survey).

**H<sub>3</sub>:** Motivations related to health behavior have a positive effect, while barriers related to health behavior have a negative effect on the willingness to buy functional foods (primary - questionnaire survey).

## **2. DATABASE AND METHODOLOGY**

During the research, I used both secondary and primary research methods. During the secondary data and information collection, I collected and organized the already published data. The theoretical background of the dissertation was provided by the review of the relevant scientific literature. During primary data collection, I used qualitative (focus group interviews and netnographic research) and quantitative methods (representative questionnaire survey of 1,000 people). I illustrated the detailed research process of the dissertation in Figure 1.

### **2.1. Secondary data and information collection**

During the secondary data and information collection, I collected the relevant scientific papers published on the topic, which I organized and analyzed. The primary purpose of the secondary research was to establish the foundation of the primary research. One of the most important aspects during data collection was to analyze and evaluate the most recent data. To explore the statistical trends, I used both domestic (KSH) and foreign (WHO, FAO, OECD) statistical databases. I primarily collected relevant literature using online search databases, both for domestic (GOOGLE TUDÓS, MATARKA) and foreign publications (PUBMED, SCIENCE DIREKT, EBSCO, SCOPUS).

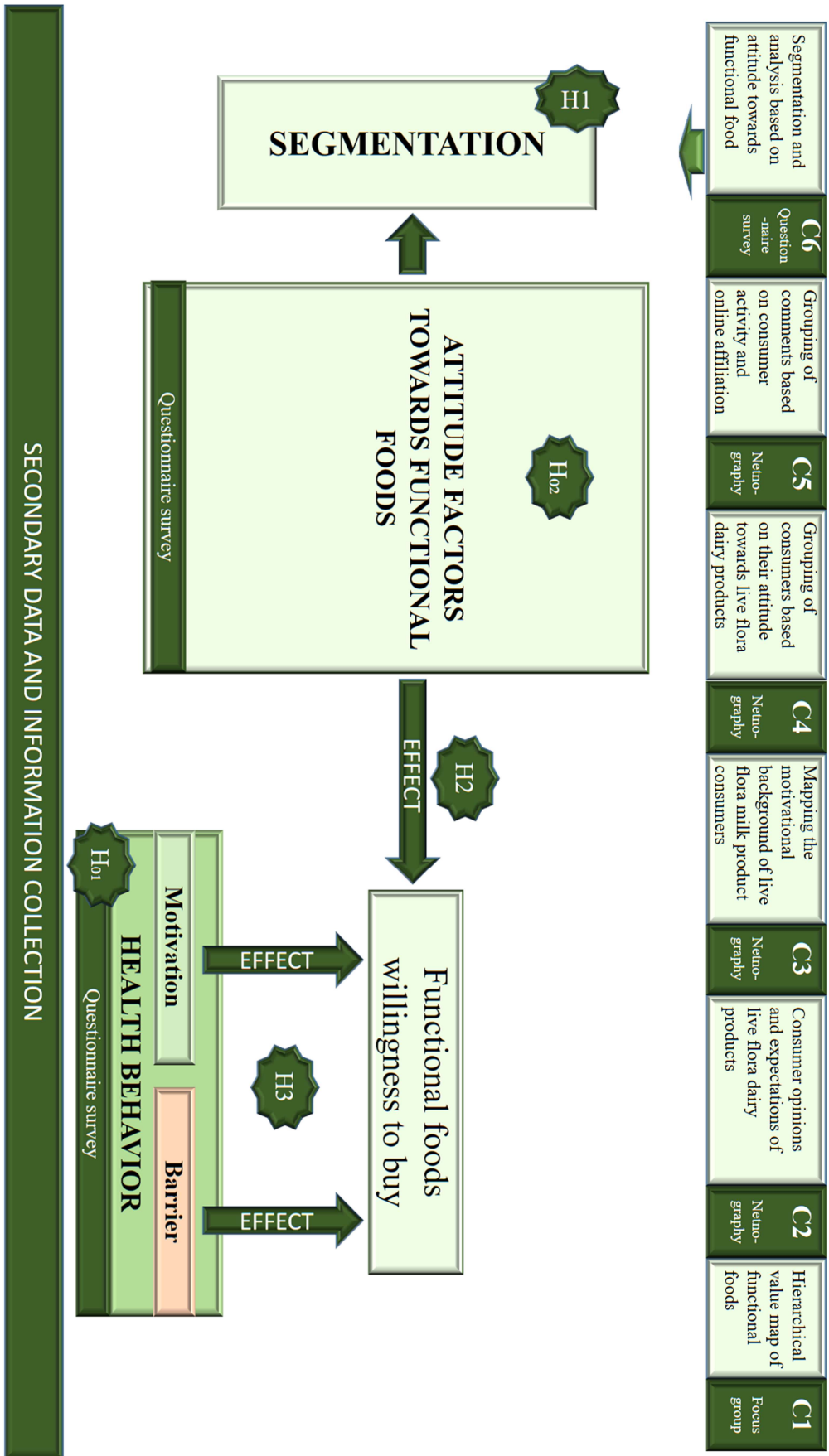


Figure 1: The research process of the dissertation

Source: Own editing, 2022

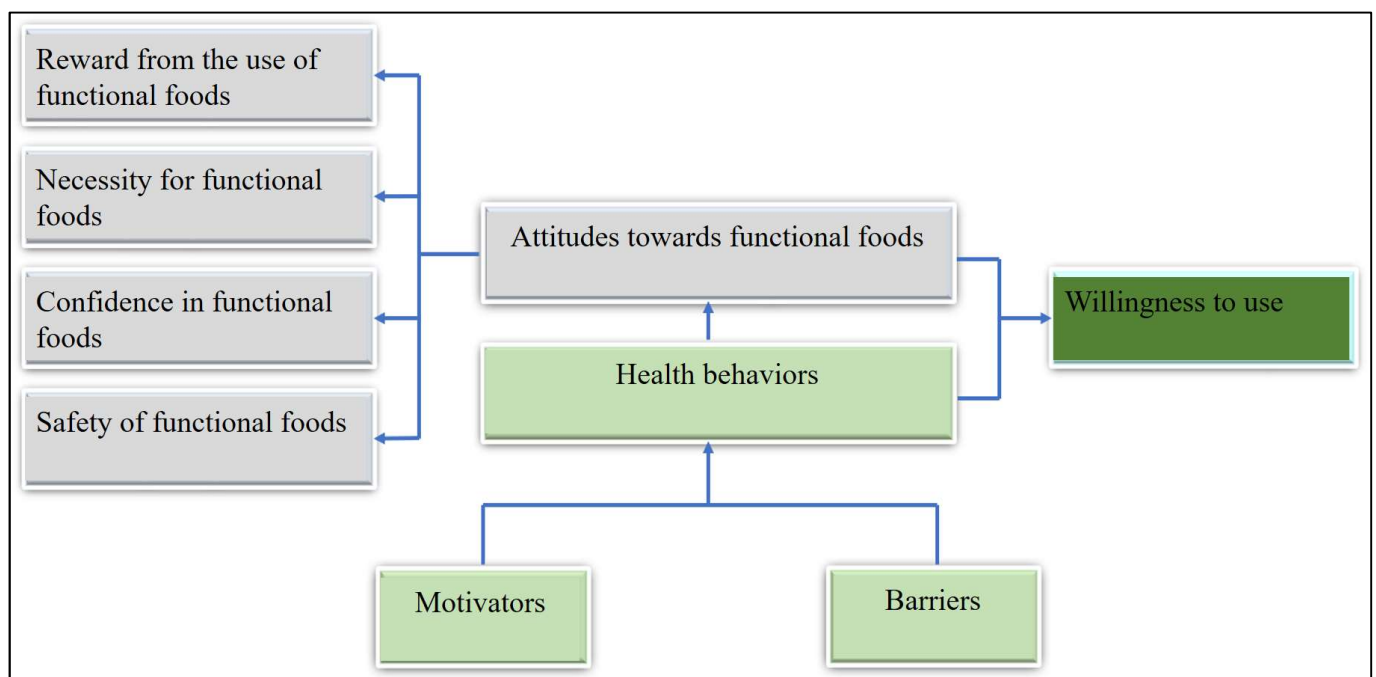
## **2.2. Primary data collection**

Secondary research was the basis for planning the primary research. For primary data collection, I used both qualitative (focus group interview, netnography) and quantitative (nationally representative questionnaire survey of 1000 people) research techniques. During the primary information collection, I first conducted two focus group studies with self-identified health-conscious (N=8) and non-health-conscious persons (N=8) in order to explore the attitude towards functional foods and the motivations and obstacles to health behavior. After that, in the second step, I conducted a netnographic research, where I also investigated the attitude towards functional foods in the market of probiotic yogurts. Finally, in the third step, using a nationally representative questionnaire survey of 1,000 people, I revealed how often the respondents consume each functional product category, what information sources they use for information regarding nutrition and how reliable they consider them to be, as well as what the respondents' attitude towards functional food is, why they are able to and the ability of those filling out the questionnaire to practice a healthy lifestyle, and where the respondents are in the area of transitioning to a healthy diet. My goal was to identify different segments in terms of consumer attitudes towards functional foods and analyze them, as well as the combined application of the health behavior motivations and barriers model (MBHB) and the consumer attitude model towards functional foods (hereinafter referred to as the dual model), which I tried to adapt to domestic consumers.

### ***2.2.1. Focus group interview***

As part of the primary research, I conducted an in-depth focus group interview, the participants of which were compiled taking into account the results of the secondary research. I organized two homogenous groups of independent members, one of which included self-identified health-conscious people, while the other group included people who did not consider themselves health-conscious. It was important that both sexes (5 women and 3 men were selected in both groups), as well as diverse age and education groups, were represented, and I also tried to take the type of settlement of residence into account when

recruiting. Given the influential role of children, the group members included both children and childless participants. An audio recording was also made of the conversation (with prior information and consent of the interviewees) in order to be able to listen to the discussion at any time later. During the preliminary preparation, I put together a focus group scenario, which helped me guide and organize the topic and course of the conversation into an appropriate structure. The questions of the scenario were compiled on the basis of the dual model compiled after the literature review, so that all possible and – important from the point of view of the subsequent questionnaire – elements were included in the conversation. I used the dual model shown in Figure 2 to compile the questions.



**Figure 2: Motivations and barriers to health behavior (MBHB) and the combined dual model of functional food consumer attitudes**

*Source: Own editing, 2019*

During the conversations, I used the hourglass technique as a moderator: we went from general questions to deeper and more detailed focus questions, and finally ended the interview with generalizations. I divided the scenario used in the study into structural parts according to the purpose of the study, the model used and the possible activation methods. My goal was to continuously maintain the attention of the participants.

### *The structure of the focus group scenario*

The focus group scenario consisted of 3 main parts. In the first, introductory part, I explained the purpose of the study and the basic rules, as well as the introduction of the participants. Then, an association game helped to tune in to the topic, during which concepts were spoken, and the participants had to write down on a piece of paper the first few words and phrases that came to their mind about each concept. At the end of the word association game, the results were discussed and discussed together under the guidance of a moderator. Based on the positive or negative meaning of the answers, it was possible to infer the feelings, beliefs and attitudes related to the examined expressions. The introductory questions also included identifying the functional food categories and their associated brands that the participants consume most, and we also determined the sources of information from which consumers obtain information about food. In the first part of the focus questions, the goal was to explore basic opinions and decision-making problems, which was followed by the ranking of functional food categories according to consumption frequency as a group task.

In the second part of the focus group interview, I investigated the relationship between attitudes towards functional foods and obstacles and motivations for health behaviour. During the tasks, I always expected spontaneous reactions from the participants first, and then, within the framework of card selection, I had to rank the statements on the cards according to importance. I edited these statements based on the elements of the double model under investigation. Then, together with the members of the group, we individually prepared the hierarchical value map for functional foods using the "means-end chain" theory and the "laddering" method, during which we revealed the product properties of functional foods that are important to consumers and encourage them to buy. During the individual interviews of the group members, from concrete and abstract product features to the successive "Why is this important to you?" we arrived at benefits and values by asking questions. During the processing of the data, I drew a hierarchical value map aggregated from each of the identified chains. The chains and connections that were mentioned more than the minimum level (in our case 3) usually appeared on the aggregated value map. The

chains of the individual elements were formed during the processing of the interviews, when I combined the similar or related mentions and covered them with one term.

The third, i.e. the final, part served for a joint summary of the opinions, and also provided an opportunity to explore factors that may not have been examined in the scenario, but are still necessary and relevant.

### ***2.2.2. Netnographic data collection***

#### *Data collection*

In connection with our research topic, I examined which of the online forms of communication found on the Internet may contain relevant information from the point of view of the research. I selected three forms of online communication for the research: the search engines that navigate to websites related to the topic (e.g. [napidoktor.hu](http://napidoktor.hu); [nosalty.hu](http://nosalty.hu); [hazisajtkeszites.hu](http://hazisajtkeszites.hu); [nutrilab.hu](http://nutrilab.hu); [meregtelenites-beltisztitas.com](http://meregtelenites-beltisztitas.com); [foodandwine.hu](http://foodandwine.hu); [maradokapenzemnel .blog.hu](http://maradokapenzemnel.blog.hu); [gyakorikedesek.hu](http://gyakorikedesek.hu); [marieclaire.hu](http://marieclaire.hu)); YouTube as a video sharing site (e.g.: [essens](http://essens); [DiaVitas](http://DiaVitas); [Dr. Hummel gel](http://Dr. Hummel gel); [Réka Pődör-Novák](http://Réka Pődör-Novák); [Ma Reggel](http://Ma Reggel); [Students in the Community Service – HaKöSZ](http://Students in the Community Service – HaKöSZ); examination of RTL Klub channels) and Facebook as a social media provider (e.g.: [Functional Food Product Council](http://Functional Food Product Council); [WEBBeteg](http://WEBBeteg); [Danoneyoghurt](http://Danoneyoghurt); [Considered Buyers Club](http://Considered Buyers Club); [Cserpes](http://Cserpes); [Nagyné & fiai Tej](http://Nagyné & fiai Tej), Dairy products social pages). I placed special emphasis on social networking sites, as nowadays many business development opportunities arise from their detailed analysis.

During the research, I only participated as an observer, during the analysis I did not want to influence the actors of the online space with comments. In the case of all sources, I continued the research until the topics of the posts and comments no longer reached the principle of theoretical saturation, i.e. they no longer had new content. In this research, I present comments that come from openly accessible pages, so the commenters' consent was not necessary for their publication. For general information, I used the Google search engine to measure the frequency of relevant terms on the entire world wide web. The primary keywords used were: “yoghurt (22,100,000 hits); and “probiotic yogurt” (11,500 hits). From the search results of the former, as well as from several comments, it can be concluded that people do not necessarily know the difference between yogurt and probiotic yogurt, or what

a probiotic is at all. After that, I also defined secondary keywords, which were the following: "functional food" (250,000 hits); "functional food yogurt" (73,600 hits); "milk health" (1,080,000 hits); "yoghurt health" (244,000 hits); "probiotic yogurt health" (46,800 hits); "yoghurt recipe" (1,270,000 hits). Then, using the above keywords, I began targeted searches on pages relevant to the study. During the search terms, I examined the first 50 hits and included in the research those pages that contained comments related to my research topic. In the course of the research, I reviewed posts and comments received on various online communication sources between 2014 and 2020, which represented a total of 475 opinions. Then I narrowed down the comments according to the research questions, i.e. to consumer opinions and expectations, as well as consumer attitudes and consumption motivations, which contained 309 (on-topic) relevant original opinions, 166 non-relevant (off-topic) comments and excluded me from the investigation. Only Hungarian sources and comments were included in the research, as the study only covered Hungarian online consumers.

### *Data analysis*

Between May and December 2020, I carried out the netnographic research in order to explore the attitudes and motivational background related to the consumption of probiotic dairy products. During the research, the main direction was the analysis of online communication, and I concentrated on the content analysis of the comments. The analysis was organized around the following 4 questions: (1) What are the consumer opinions and expectations of probiotic yogurt? (2) What motivational background characterizes Hungarian probiotic yogurt consumers? (3) In what and how many groups can they be sorted based on their attitude towards probiotic yogurt? (4) What online consumer groups can be distinguished in relation to probiotic yogurt based on the netnographic research?

I collected a total of 309 (on-topic) relevant original comments on the topic going back to 2014, which I processed with qualitative content analysis.

### *2.2.3. Nationally representative questionnaire survey of 1,000 people*

The overview of the chosen topic and the foundation of the research began with the collection of secondary information, during which, with the help of domestic and foreign literature, we obtained a complex picture of the results of research related to the topic so far.

#### *Sampling*

We used a questionnaire to explore the attitude of the adult Hungarian population towards functional food. In the winter of 2019, we launched a nationwide representative questionnaire survey of 1,000 people to achieve the objectives of the research. The sample reflects the composition of the basic population based on four factors (region, settlement type, gender, age). Data collection was carried out on behalf of a market research company by interviewers trained in the topic in advance.

#### *Questionnaire*

The questionnaire consisted of five blocks of questions, in which the fifth block contained questions about the background variables. In the questionnaire, we used the term health-protective food instead of functional food, since the former is still a foreign concept to consumers, and before the interview, the interviewer read out the concept of health-protective/functional food so that the respondent could give the most relevant and accurate answer to the to questions asked.

The elements of the question blocks used during the survey were as follows:

1. In the first stage, we examined how often the respondents consume each functional food product category (1=never, 2=less than monthly, 3=monthly, 4=weekly, 5=daily, 0=don't know /I do not answer). Furthermore, we were also interested in which information sources the participants in the questionnaire survey use for information about nutrition and how reliable they consider them to be. Reliability was assessed using a 7-point Likert scale (1=not reliable at all, 7=completely reliable, 0=don't know/don't answer).

2. In the second part, we examined the attitude towards functional foods along four dimensions (1. the benefits of functional/health-protective foods, 2. the need for functional/health-protective foods, 3. trust in functional/health-protective foods, 4. the safety of functional/health-protective foods) with a seven-point Likert scale (1= do not agree at all, 7= completely agree, 0= do not know/don't answer).
3. In the next block 3, we researched the motivations for practicing a healthy lifestyle, and the obstacles that prevent respondents from pursuing a healthy lifestyle. Respondents had to evaluate the statements related to the topic on a 4-point scale (1=completely disagree, 2=disagree, 3=agree, 4=completely agree, 0=don't know/don't answer).
4. In the fourth stage, we wanted to get an answer with the help of the transtheoretical model as to how the respondents see/feel where they are in the area of transitioning to a healthy diet.
5. In the last block, we examined the respondents based on their background variables, such as: no; age; marital status; legal status/main activity; subjective income, subjective health awareness; body height; body weight.

The questionnaire survey was conducted with the involvement of 1000 people, the data was evaluated with the IBM SPSS Statistics 2.0 program. The questionnaire survey reflects the composition of the basic population based on four factors (gender, age, settlement and region).

### *Data analysis*

I evaluated the results of our quantitative research using the IBM SPSS 2.0 mathematical-statistical analysis software package.

Among the statistical procedures, I used descriptive statistical methods in the first step, such as distribution ratio, mean, standard deviation, and skewness. Furthermore, to analyze the relationship between the two categorized variables, I used a cross-tabulation analysis with a Chi<sup>2</sup> test. I used analysis of variance (ANOVA) for scale-type questions.

In the next, i.e. the second, stage of the analysis, I performed two factor analyses, which were as follows:

First, I assessed the motivations and obstacles to the healthy lifestyle of the domestic population using the MBHB model. The model contains 7 statements both in terms of motivation and obstacles. Respondents had to evaluate the statements on a four-point Likert scale (1=completely disagree; 2=disagree; 3=agree; 4=completely agree; 0=don't know, do not answer). During data reduction, I used Maximum-likelihood as the factor extraction method, and the rotation method was Varimax rotation. In this case, the number of factors was determined by a priori criteria, because based on the explained variance (62,330) a 3-factor structure would have been recommended, but the background of the decision was that the theoretical MBHB model also examined the motivations related to a healthy lifestyle along 2 factors and obstacles. Although the explained variance in the two-factor solution was 53.516%, i.e. it did not reach 60.000%, we can say that the principal component still retains more than 50% of its original information content, but KMO: 0.878 and Bartlett's Test (Sig): 0.000 show good values, so the variables are suitable for factor analysis and the interpretability of the model, so I decided on the factor number for its practical applicability. The eigenvalue of the factors was in all cases greater than 1. The MSA values were also greater than 0.5 in all cases, so no variable had to be excluded during the factor analysis. With the help of factor analysis, I separated 2 factors along the lines of motivations and obstacles to practicing a healthy lifestyle (with 7 statements each). I calculated the Cronbach's Alpha value for the reliability test of the statements belonging to the finalized factors.

During the second factor analysis, I examined the consumer attitude of the Hungarian population towards functional/health-protecting foods with 26 statements. Respondents had to rate the statements on a seven-point Likert scale (1=completely disagree; 7=completely agree; 0=don't know, don't answer). During the data reduction, I again used the Maximum-likelihood method with Varimax rotation. I measured the suitability of the data with the KMO indicator (KMO: 0.914) and Bartlett's test (sig: 0.000), and the explained variance was: 70.064 %. I determined the number of factors using the Kaiser criterion. Of the original 26 statements, 21 statements were included, since 5 statements (*13. It is good that modern technology enables the development of health-protective foods. 14. I am only willing to eat*

*foods that do not have a medicinal effect. 15. Delicious things have a bad effect on health. 17. There is no point in making health-protective foods, they are unhealthy from food. 24. The consumption of health-protecting foods is completely safe.*) I had to remove it during the analysis, because the factor weights for the statements did not reach a value above 0.5 in absolute value. In all cases, the eigenvalue of the factors was greater than 1. Based on the results, I was able to separate the consumer attitude towards functional foods along 4 factors:

- *The first factor: the benefits provided by functional/health-protective foods* (I must draw attention to the fact that domestic consumers reclassified the statement originally belonging to the group of trust in functional/health-protective foods, statement 18 (Health-protective foods help me feel good) to into factor 1 (benefits provided by functional/health-protective foods).
- *The second factor: the need for functional/health-protective foods.*
- *The third factor: safety of functional/health-protecting foods.*
- *The fourth factor: trust in functional/health-protecting foods.*

I calculated the Cronbach's Alpha value for the reliability test of the statements belonging to the finalized factors.

After the factor analysis, I performed a cluster analysis along the factors formed from the consumer attitude towards functional foods. I measured all the variables included in the cluster formation on a seven-point Likert scale (1 – completely agree; 7 – completely disagree; 0 – I don't know, I don't answer), so there was no need to standardize the variables, and I didn't identify any outliers. With the help of the correlation matrix, I found that the four factors do not correlate with each other ( $r \approx 0$ ), so there is no relationship between the variables, so all the conditions for the cluster analysis are met. To form the groups, I used the Ward method within the hierarchical cluster analysis (since all variables were measured on a metric scale; there were no outliers; the variables were not correlated with each other, each group is characterized by roughly the same number of elements and has nearly the same standard deviation). The Ward procedure requires the selection of the squared Euclidean distance, which is based on the square of the standard deviation, so I combined the groups that increase the squared standard deviation within the cluster the least. There is no fixed rule for determining the number of clusters, so I decided on 4 clusters based on the

dendrogram run during the analysis. I proved the significant differences between the individual clusters with a One-Way ANOVA analysis of variance performed on the previously established factors, according to which, in our case,  $p < 0.001$  for all four factors, i.e. they are significantly different from each other. In our case, the variance within the cluster was smaller than the total variance, so we managed to form homogeneous groups.

- Cluster 1 is best characterized by the need for functional foods factor and the trust factor in functional/health-protecting foods.
- Cluster 2 is characterized by all four separate factors, such as the benefits provided by functional foods; the need for functional foods; trust in functional foods and the safety of functional/health food.
- Cluster 3 is characterized only by the factor of benefits provided by functional foods.
- Cluster 4 is characterized only by the safety factor of functional foods.

For the socio-demographic characterization of the clusters, I performed a cross-tabulation analysis and a  $\chi^2$  test to see if there is a correlation between the variables. I used this statistical procedure because I measured the background variables with non-metric variables. To evaluate the individual clusters based on the consumer attitude towards functional foods, I used the One-Way ANOVA method and revealed significant differences with the help of an F-test, since the related variables were measured on a metric scale.

Finally, I measured the influence of the above-mentioned attitudes towards functional foods, as well as factors related to the motivation and barriers to health behavior, on the willingness to buy functional foods. In the multivariate regression, I measured the strength of the relationship with the square of the  $R^2$ , multiple correlation coefficient. During the analysis, we also determined the significance of the ANOVA F-test, which proves the existence of a relationship between the standard deviation explained by the regression line and the unexplained standard deviation ( $\text{sig.} < 0.05$ ). Furthermore, I measured the significance of the variables determining the slope with a t-test, which is less than 5 percent, which I used to determine the variables affecting the willingness to buy, and I measured its extent with a beta weight. In order to examine the conditions of the regression calculation, I first had to rule out multicollinearity, that is, there should be no relationship between the independent variables ( $r \approx 0$ ) and  $p > 0.05$ , that is, it should not be significant. After that, I

checked the fulfillment of homoscedasticity on a point cloud diagram. Finally, I examined the distribution of the residuals using a histogram diagram and the Kolmogorov-Smirnov one-sample test.

### 3. MAIN FINDINGS OF THE THESIS

Presentation of the results and main findings related to the objectives and hypotheses related to the primary research conducted on the basis of my secondary research:

<b>Objective C1:</b>	<i>Determining the consumer value of functional foods - creating the hierarchical value map.</i>
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Within the framework of a focus group survey, I created the hierarchical value map and with the help of the health-conscious respondents, I revealed the product features that lead to the values through the benefits. Many studies have highlighted the fact that consumers look for value in their purchase decisions, and these values and their chains are described in the hierarchical value map. The hierarchical value map explains why someone chooses a functional food over its conventional counterpart.

Based on the results, the following were classified as the most important product properties: ideal product composition, quality, added ingredients beneficial to health, reduced fat and cholesterol content, special foods. The following benefits were listed for the properties listed above: normal digestion, freedom from harmful substances, avoidance of (deficiency) diseases (which result from nutrition). Finally, through the benefits, we received the values, which are the following: avoiding drugs, feeling good, good quality of life, all of which contribute to maintaining health.

<b>Objective C2:</b>	<i>Online Hungarian consumer opinions and expectations of probiotic dairy products.</i>
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I investigated consumer opinions and expectations regarding probiotic dairy products within the framework of netnographic research. Most of the informational articles on the internet say that probiotic dairy products are excellent foods in terms of their effects on health, but they do not associate all of this with the concept of functional foods, so the contributors do not write about probiotic dairy products in this context either. During the

analyses, it can also be observed that the commenters do not necessarily know what a probiotic is and what the difference between probiotic and non-probiotic yogurts is. Commentators are divided into two main groups: those who like dairy products and those who oppose the consumption of dairy products.

A fundamentally important factor in the content analysis of probiotic yogurt is that a relatively large part of the population suffers from lactose intolerance, and for this reason an active counter-campaign against the consumption of all kinds of dairy products was announced. Fans of the current food fashion trends and environmentally conscious consumers also have serious expectations on the dairy products market and demand the introduction of products that meet their current needs. Parallel to the newer and newer dietary trends, the position of science also changes almost every year, some publications recommend, while others outright oppose the consumption of dairy products. These phenomena confused and unsettled a large number of consumers, as a result of which a significant degree of mistrust developed towards food industry manufacturers and even researchers, doctors and dietetic organizations.

<b>Objective</b>	<i>Mapping the motivational background of consumers of online</i>
<b>C3:</b>	<i>Hungarian probiotic dairy products.</i>

I used a netnographic study to assess the motivational background of Hungarian consumers of probiotic dairy products online. Based on the comments, three different groups can be distinguished based on the motivations for consuming probiotic yogurt: 1) those who require culinary variety, 2) those with digestive system problems, and 3) the group of health-conscious consumers.

<b>Objective</b>	<i>Grouping of online Hungarian consumers based on their</i>
<b>C4:</b>	<i>attitude towards probiotic dairy products.</i>

Within the framework of netnographic research, I examined the grouping of Hungarian online comments based on attitudes related to probiotic dairy products. I grouped the contributors according to whether they evaluate dairy products with probiotic favorably or unfavorably. I separated three groups: 1) *confident*, 2) *doubters/uncertain* and 3) *rejecters*.

<b>Objective</b> <b>C5:</b>	<i>Grouping of online Hungarian comments related to probiotic yogurt based on consumer activity and online attachment.</i>
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Using a netnographic study, I grouped the contributors according to consumer activity related to probiotic yogurt and online attachment:

- (I.) *Insiders* can be characterized by high consumer activity and strong online community ties, and can be divided into three subgroups based on their character: 1) *self-proclaimed experts*, 2) *actual experts* and 3) *advertisers*.
- (II.) *Devotees* have high consumer activity, but their attachment to the online community is very weak. Among them we can find the "*silent*" subgroup, who, in terms of consumer activity, play a prominent role in relation to probiotic dairy products, but do not publish their opinions on any platform and use the online space more for a kind of knowledge expansion.
- (III.) *Tourists* are not really interested in consuming the given product and their attachment to the online community is also low.
- (IV.) *Minglers* are very strongly connected to the online group, but their consumer activity is low.

Research hypothesis	Confirmed/ rejected
<b>H<sub>01</sub>:</b> <i>The elements outside the main diagonal of the correlation matrix of the variables of motivations and obstacles related to health behavior deviate from zero only by chance, so the variables do not correlate with each other, therefore it is not possible to perform a factor analysis.</i>	Rejected

I rejected the H<sub>01</sub> hypothesis (investigated within the framework of a representative questionnaire survey of 1,000 people), since there is a correlation between the initial variables and the KMO: 0.878; Bartlett's Test (Sig): 0.000; Explained variance: 53.516, so the initial variables were suitable for factor analysis. During the factor analysis, I separated 2 factors based on the statements formed on the basis of the MBHB model along the motivations and barriers to practicing a healthy lifestyle (with 7 statements each).

- Statements of motivations related to a healthy lifestyle were included in the first factor. Among the variables, it is important to highlight the three factors that best characterize the first factor, according to which the respondents believe that they are primarily interested in practicing a healthy lifestyle because this way they can feel more energetic (factor weight: 0.739) and live longer (0.737) , and they think that this way they can control their body weight (factor weight: 0.724).
- In the second factor, the statements that listed the obstacles related to a healthy lifestyle were arranged. This group is mostly characterized by the fact that they do not know what they could do for a healthy lifestyle (factor weight: 0.708).

Research hypothesis	Confirmed/ rejected
<i>H<sub>02</sub>: The elements outside the main diagonal of the correlation matrix of the variables of consumer attitudes towards functional foods deviate from zero only by chance, so the variables do not correlate with each other, therefore factor analysis cannot be performed.</i>	Rejected

I rejected the **H<sub>02</sub>** hypothesis (investigated within the framework of a representative questionnaire survey of 1,000 people), as there is a correlation between the initial variables and the KMO: 0.914; Bartlett's test (sig): 0.000; Explained variance: 70.064, so the initial variables are suitable for factor analysis. I was able to separate the consumer attitude towards functional foods along 4 factors:

- *First factor: Reward from the use of functional foods*
- *Second factor: Necessity for functional foods*
- *Third factor: Confidence in functional foods*
- *Fourth factor: Safety of functional foods*

<b>Objective C6:</b>	<i>Segmentation and analysis of the domestic population based on consumer attitudes towards functional food.</i>	
<b>Research hypothesis</b>		<b>Confirmed/ rejected</b>
<i>H<sub>1</sub>: Based on consumer attitudes towards functional/health-protective foods, clearly distinguishable groups/segments can be created.</i>		Confirmed

I accepted hypothesis **H<sub>1</sub>** (investigated within the framework of a representative questionnaire survey of 1,000 people), as I proved the significant differences between the

individual clusters with a One-Way ANOVA analysis of variance carried out on the factors formed along the previously established consumer attitude towards functional/health-protective foods, according to which in our case all in the case of the four factors,  $p=0.000$ , i.e. they are significantly different from each other. In our case, the variance within the cluster was smaller than the total variance, so we managed to form homogeneous groups, and I measured all our variables on a seven-point Likert scale, so there was no need to standardize the variables, and I did not identify outliers. Furthermore, based on the correlation matrix, the four factors do not correlate with each other ( $r \approx 0$ ), so there is no relationship between the variables, so all conditions for the cluster analysis were met. Clusters based on consumer attitudes towards functional/health-protective foods:

- *Cluster 1 – elderly optimists*
- *Cluster 2 – committed health-conscious people*
- *Cluster 3 – indifferent middle-aged people*
- *Cluster 4 – irredeemably unhealthy people*

<i>Research hypothesis</i>	<b>Confirmed/ rejected</b>
<i>H2: Attitudes towards functional foods have a positive effect on the willingness to purchase functional foods.</i>	<i>Confirmed and rejected</i>

I could neither fully accept nor reject the **H2** hypothesis, because two of the 4 separate consumer attitude factors towards functional/health-protective food, "benefits" (beta-weight = 0.495) and "trust" (beta-weight = 0.158 ) has a positive influence in 28.3%, even the other two, "necessity" and "security" have no effect on the change in willingness to buy (we examined it within the framework of a representative questionnaire survey of 1,000 people). To prove it, I performed a regression calculation.

<i>Research hypothesis</i>	<b>Confirmed/ rejected</b>
<i><b>H3:</b> The factor "motivations" related to health behavior has a positive effect, while the factor "barriers" related to health behavior has a negative effect on the willingness to buy functional foods.</i>	<i>Confirmed</i>

I accepted the **H3** hypothesis (we examined it within the framework of a representative questionnaire survey of 1,000 people). I measured the direction and magnitude of the effect of each factor on the willingness to buy functional foods using a regression calculation. Based on the results, the "motivation" factor has a positive effect (beta weight = 0.342), while the "obstacles" factor has a negative effect (beta weight = -0.075) on the willingness to buy. Furthermore, the "motivators" and "barriers" play a role in 11.7% of the factors separated along the lines of health behavior in the change in willingness to consume.

#### 4. NEW OR NOVEL RESULTS OF THE THESIS

Below I present the most important new and novel results I have gained during my research.

**T<sub>01</sub>:** I completed the domestic adaptation of the MBHB model of motivations and obstacles related to a healthy lifestyle, based on which I separated the domestic population into 2 factors according to their motivations and barriers related to a healthy lifestyle during a nationwide representative questionnaire survey of 1,000 people.

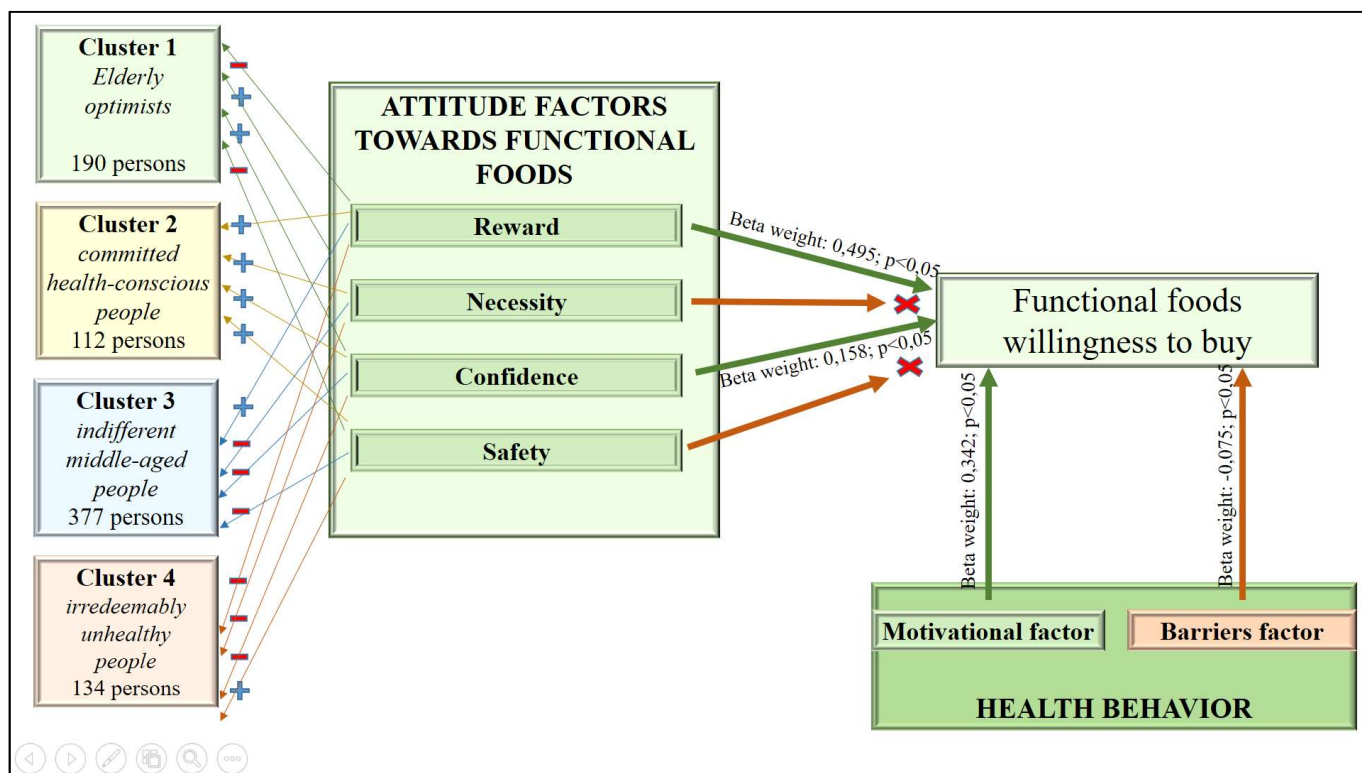
**T<sub>02</sub>:** I completed the domestic adaptation of the consumer attitude model related to functional/health-protective foods, based on which, during a nationwide representative questionnaire survey of 1,000 people, I separated the domestic population into 4 factors based on their consumer attitude toward functional foods (1) Reward from the use of functional foods; 2) Necessity for functional foods; 3) Confidence in functional foods; 4) Safety of functional foods).

**T<sub>1</sub>:** Based on the representative survey of 1,000 people, I separated groups and segments that can be easily distinguished based on consumer attitudes towards functional foods (cluster 1: elderly optimists; cluster 2: committed health-conscious people; cluster 3: indifferent middle-aged people; cluster 4: irredeemably unhealthy people), which I characterized on the basis of their socio-demographic background variables and their attitude towards functional foods.

**T<sub>2</sub>:** I found that "reward" (beta weight = 0.495) and "necessity" (beta weight = 0.158) have a positive influence on functional foods in 28.3% of the factors formed along the consumer attitude towards functional foods in the change in willingness to buy, while the "confidence" and "safety" factors have no role in terms of willingness to buy. In order to explore the above, I assessed the results of the nationally representative questionnaire survey of 1,000 people.

**T<sub>3</sub>:** During a nationwide representative survey of 1,000 people, I found that the "motivation" factor of health behavior has a positive effect (beta weight = 0.342), while the "barriers" factor has a negative effect (beta weight = -0.075) on the willingness to buy. Furthermore, the "motivators" and "barriers" play a role in 11.7% of the factors separated along the lines of health behavior in the change in willingness to consume.

In Figure 3, I present the summary structure of the factor and cluster analysis of the questionnaire survey, as well as the regression calculation, in which I have depicted the network of correlations between the factors formed along the consumer attitude towards functional foods and the clusters formed from them. Furthermore, I illustrate the degree and direction of the influence of the attitude factors towards functional foods and the "motivational" and "barriers" factors of health behavior on the willingness to buy functional foods.



**Figure 3: Summary structure of the factor and cluster analysis and regression calculation of the questionnaire survey (N=1000)**

Source: Own editing, 2022

In Figure 4, I illustrate the integration of new or novel scientific results into the complex research model.

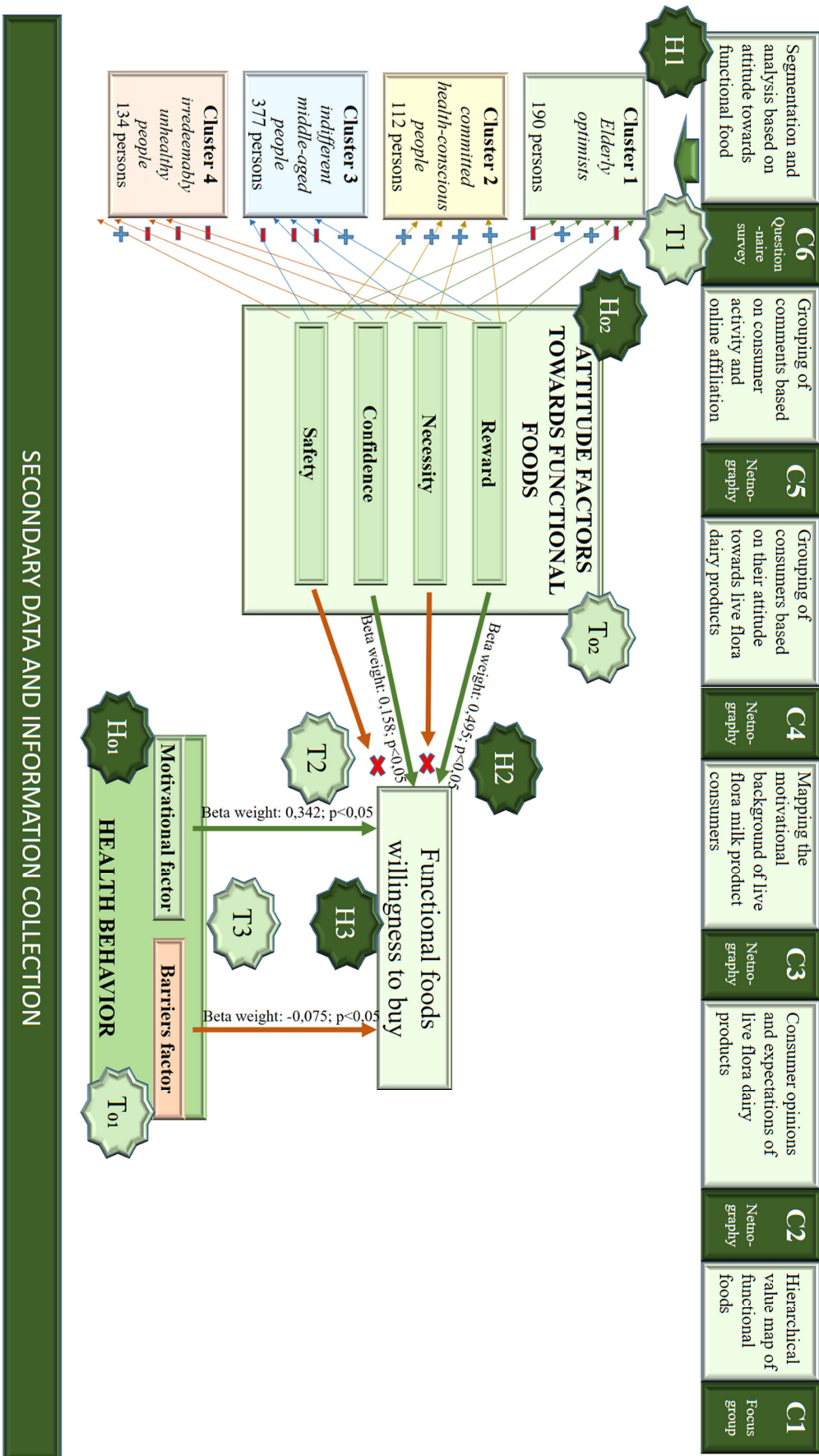


Figure 4: Placement of objectives, hypotheses, new or novel results in the complex research model

Source: Own editing, 2022

## 5. PRACTICAL USE OF THE RESULTS

In this section, I list my most important suggestions from the point of view of the practical applicability of my results.

### *Proposals related to **objective C1**:*

Whether it is the development of a new product and/or an existing product, the hierarchical value map can help to choose the right marketing tools. With regard to the proposals made for the promotion of functional foods, it is definitely important to emphasize in marketing communication that their consumption has a special importance and role in preserving health.

### *Proposals related to **objective C2**:*

Based on my suggestions in the light of consumer opinions and expectations, the most important thing is that consumers receive understandable and authentic information about what probiotics are and why they are important in a healthy diet. Due to the ever-increasing environmental awareness of product manufacturers and distributors, an important expectation from consumers regarding the product is environmental awareness, both in terms of product packaging and production. Furthermore, it can be an important aspect during the design of the products that, in addition to the traditional probiotic milk-based products, products corresponding to various nutritional fashion trends, such as probiotic vegan "yogurts" also should appear.

### *Proposals related to **objective C3**:*

The driving force of consumption, i.e. its motivation, has a prominent role in the promotion of a product category, as these greatly influence consumers during their purchases. Similarly to the hierarchical value map, health care appears here as a value and motivational background, so special importance should be attached to this when communicating information about the products. In addition to all this, there is also a demand

for culinary variety, which provides an excellent opportunity to draw attention to probiotic dairy products with good recipes.

*Proposals related to **objective C4**:*

It is important that customers are informed about exactly what probiotics are and what the differences are between individual products. My current research also proves that information is asymmetric between science and the consumer market and is only accessible and understandable to a very narrow group. This plays an important role in the fact that the group of "rejecters" has a bad opinion of dairy products, and that the group of "doubters/unsure" does not know what to think about them. This can be solved if the companies that produce and distribute probiotic foods determine their marketing strategy with the involvement of health professionals, and also include doctors and dietitians who are credible to society, as well as nutritionists who are credible from a nutritional point of view, in their promotional programs promoting healthy eating.

*Proposals related to **objective C5**:*

In addition to research and development and innovation, customer awareness and knowledge expansion play an important role in promoting the market success of milk and dairy products. Constantly changing trends and new fads in the field of nutrition completely confuse customers and, unfortunately, make them very distrustful. In this regard, it is very difficult for consumers to find an authentic source of information that could help them with their purchases, especially since the online space contains a lot of false and misleading information. In order to overcome these obstacles, our proposals include that it would be advisable to inform the population more intensively at the level of government institutions.

*Proposals related to **objective C5 and hypothesis H1**:*

It is of particular importance that the different segments require different marketing strategies, because the members of *cluster 2 (committed health conscious)* are active consumers of functional food and care and do a lot for their health, so it is easier to convince

them about consumption. Since they are active seekers of information about nutrition, it is necessary to map the places that they use and it may be worthwhile to deploy some marketing communication tools there as well. It may be worthwhile for them to create different health and nutrition clubs on individual social media platforms and/or develop phone applications that would help them when purchasing products.

The most difficult group to reach is *cluster 4 (irredeemably unhealthy people)*, who barely consume functional foods and almost completely reject functional foods. They have the worst indicators regarding a healthy lifestyle and they are not really willing to change that. Because of this, they are almost completely inaccessible from a marketing communication point of view. First of all, at the government level, people must be made aware of the dangers of being overweight and obese, as well as where they can get help to practice a healthy lifestyle. In their case, it is very important that they receive guidance from a qualified and credible professional and that the lifestyle change does not involve a large financial burden. First of all, it is necessary to achieve that they can change their point of view, and then gradually guide them to the market of health-protecting foods with short, understandable and authentic communication. This segment needs such a comprehensive marketing strategy and marketing communication that they only try to get the members to change their attitude, which would entail a significant financial burden both from the point of view of the government and/or even the food industry.

*Cluster 3 (indifferent middle-aged)* members are indifferent to functional foods. In their case, perhaps the best solution to stimulate consumption could work through their senses, because tasting and the delicious taste could win them over. Pricing requires great care, because the largest proportion are those who are currently living on their income, but cannot put it aside anymore. During marketing communication, more emphasis should be placed on short and authentic information. Due to the large number of middle-aged people, the development of various phone applications can be considered for this segment as well, which helps them find and practice a health-conscious lifestyle, and can also help them choose products.

For *cluster 1 (elderly optimists)*, pricing is of outstanding importance, since in terms of subjective incomes, the majority are those who have just enough money, but cannot put it aside anymore. Particular attention should be paid to the fact that the members of this

cluster do not specifically prefer artificially produced products, and it is important that the packaging reflects this.

Overall, we can conclude that the four segments require the development of four different strategic plans. It is important to note that the evaluation and consumption of functional foods is related to health awareness and actions taken to preserve health. The way to stimulate consumption is through lifestyle changes.

*Proposals related to hypothesis H2:*

In order to increase the willingness to buy functional products, it is important to emphasize the advantages of the product category during communication and to build trust in the category, because these have influencing power. When planning marketing tools, it is worth placing a lot of emphasis on product packaging and point-of-sale (POS) advertising, as information is not usually collected in relation to this product category. The recommendation of a reliable, credible specialist can have a prominent role, which can be used to increase consumption.

*Proposals related to hypothesis H3:*

In order to increase the willingness to buy functional products, marketing communication plays an important role, and the role played by this product category in the practice of health behavior must be emphasized, because it can act as an incentive. It is important to note that the factors hindering the practice of health behavior have a negative effect on the willingness to purchase health-protecting foods, and in the case of consumers, it is absolutely necessary to take steps to overcome their barriers and be motivated regarding their health behavior. The incentive requires both state and food industry intervention. On the part of the state, it would be necessary to distribute health prevention lectures, programs, and advertisements. It would be important to provide free expert advice, for example: from a doctor, a dietitian, as well as the development of applications and the creation of health clubs that provide guidance on nutrition and exercise.

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## 6. PUBLICATIONS ON THE SUBJECT OF THE THESIS

According to the Operating Regulations of the Károly Ihrig Doctoral School, publications that can be taken into account:

### **Publications published in international scientific journals in a foreign language:**

1. **Papp-Bata Ágnes** - Szakály Zoltán (2020): The relationship between the motivators and barriers of health behaviour and consumer attitudes towards functional food. *Acta Alimentaria* 49, 287-294. **Impakt factor: 0,65**

### **Publications published in Hungarian, in scientific journals, in Hungarian, with summaries in foreign languages:**

2. **Papp-Bata Ágnes** - Szakály Zoltán (2021): A probiotikumok múltja, jelene és jövője. *Tejgazdaság* 78, 19-27.
3. **Papp-Bata Ágnes** - Szakály Zoltán (2021): Fogyasztói attitűdök a probiotikus joghurtok piacán - Netnográfiai kutatás, *Tejgazdaság* 78, 29-41.
4. **Papp-Bata Ágnes** - Csiki Zoltán - Szakály Zoltán (2018): Az egészségvédő élelmiszerekkel kapcsolatos fogyasztói magatartás. A hiteles tájékoztatás szerepe. *Orvosi Hetilap* 159, 1221-1225. **Impakt factor: 0,564**

### **Publications published in Hungarian, in scientific journals, in Hungarian, with a summary in Hungarian:**

5. **Papp-Bata Ágnes** - Mile Marianna - Szakály Zoltán - Csiki Zoltán (2018): A probiotikumok alkalmazása időskorban – egészségügyi megfontolások és piaci helyzetkép. *Idősgyógyászat* 3, 63-67.
6. **Papp-Bata Ágnes** - Csiki Zoltán - Szakály Zoltán (2014): A funkcionális élelmiszerek egészségügyi és gazdasági jelentősége. *Magyar Gasztroenterológia* 2014 : Suppl 2, 1-7.

### Scientific book/book chapter in Hungarian:

7. **Papp-Bata Ágnes** - Szakály Zoltán (2019): A pozitív attitűd és a hiteles információ jelentősége a funkcionális élelmiszerek fogyasztásában. In: Fehér A., Szakály Z. (Eds.): Egészségpiaci kutatások Debrecen, Magyarország: Debreceni Egyetem Gazdaságtudományi Kar. 66-74. o.
8. **Papp-Bata Ágnes** (2020): Összefüggés a fogyasztói attitűdök, az egészségmagatartás motivációi és akadályai között a funkcionális élelmiszerek piacán. In: Bihari E., Molnár D., Szikszai-Németh K., (Eds.): Tavaszi Szél 2019 Konferencia = Spring Wind 2019: Konferenciakötet II. Budapest, Magyarország: Doktoranduszok Országos Szövetsége (DOSZ) 604, 339-354.

### Other publications on the topic of the dissertation:

9. Kontor Enikő - Balsa-Budai Nikolett – **Papp-Bata Ágnes** - Kiss Marietta (2019): Az élelmiszercímkek szerepe az egészségtudatos táplálkozás megvalósításában – Ösztönző és gátló tényezők. In: Fehér A., Szakály Z. (Eds.): Egészségpiaci kutatások Debrecen, Magyarország: Debreceni Egyetem Gazdaságtudományi Kar. 45-55. o.
10. Mile Marianna - **Papp-Bata Ágnes** - Szakály Zoltán - Csiki Zoltán (2018): Szarkopenia befolyásolása táplálkozási módszerekkel. *Metabolizmus* 16, 284-286.
11. Csiki Zoltán\* - **Papp-Bata Ágnes**\* - Czompa Attila - Nagy Anikó - Bak István - Lekli István - Javor András - Haines D. David - Balla György – Tósaki Árpád (2015): Orally Delivered Sour Cherry Seed Extract (SCSE) Affects Cardiovascular and Hematological Parameters in Humans. *Phytotherapy Research* 29, 444-449. **Impakt faktor: 2,694**
12. Javor András - Nagy Anikó - **Papp-Bata Ágnes** - Vass Nóra - Oláh János - Csiki Zoltán (2015): Bacterial overgrowth can be detected by breath hydrogen measurement before clinical manifestations in suckling lambs. *Acta Veterinaria Brno* 84, 243-247. **Impakt faktor: 0.442**

13. **Papp-Bata Ágnes** - Csiki Zoltán - Tósaki Árpád - Szakály Zoltán (2015): Meggymag kivonat – Egy új termék a funkcionális élelmiszerek piacán? *Táplálkozásmarketing* 2, 31-34.
14. **Papp-Bata Ágnes** - Csiki Zoltán - Nábrádi András - Szakály Zoltán (2014): A probiotikumok táplálkozás-élettani és piaci jelentősége. *Tejgazdaság* 74, 47-51.

**Number of peer-reviewed publications: 13**

**It is in English: 3**

**Total impact factor of journals (all publications): 4,35**

**Total impact factor of journals (publications related to the dissertation): 1,214**

**Number of references: 28 (independent of this: 15)**



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Candidate: Ágnes Papp-Bata  
Doctoral School: Károly Ihrig Doctoral School of Management and Business  
MTMT ID: 10060133

### List of publications related to the dissertation

#### Articles, studies (8)

1. **Papp-Bata, Á.**, Szakály, Z.: A probiotikumok múltja, jelene és jövője.  
*Tejgazdaság. 78* (1-2), 19-27, 2021. ISSN: 1219-3224.  
DOI: <http://dx.doi.org/10.34100/TEJGAZDASAGvol78iss1-2pp19-27>
2. **Papp-Bata, Á.**, Szakály, Z.: Fogyasztói attitűdök a probiotikus joghurtok piacán - Netnográfiai kutatás.  
*Tejgazdaság. 78* (1-2), 29-41, 2021. ISSN: 1219-3224.  
DOI: <http://dx.doi.org/10.34100/TEJGAZDASAGvol78iss1-2pp29-41>
3. **Papp-Bata, Á.**: Összefüggés a fogyasztói attitűdök, az egészségmagatartás motivációi és akadályai között a funkcionális élelmiszerek piacán.  
In: Tavasz Szél 2019 Konferencia = Spring Wind 2019: Konferenciakötet II.. Szerk.: Bihari Erika, Molnár Dániel, Szikszai-Németh Ketrin, Doktoranduszok Országos Szövetsége (DOSZ), Budapest, 339-354, 2020. ISBN: 9786155586613
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5. **Papp-Bata, Á.**, Szakály, Z.: A pozitív attitűd és a hiteles információ jelentősége a funkcionális élelmiszerek fogyasztásában.  
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6. **Papp-Bata, Á.**, Mile, M., Szakály, Z., Csiki, Z.: A probiotikumok alkalmazása időskorban - egészségügyi megfontolások és piaci helyzetkép.  
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7. **Papp-Bata, Á.**, Csiki, Z., Szakály, Z.: Az egészségvédő élelmiszerekkel kapcsolatos fogyasztói magatartás: a hiteles tájékoztatás szerepe.  
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DOI: <http://dx.doi.org/10.1556/650.2018.31121>  
IF: 0.564
8. **Papp-Bata, Á.**, Csiki, Z., Szakály, Z.: A funkcionális élelmiszerek egészségügyi és gazdasági jelentősége.  
*Magyar Gasztroenterológia. 2 klsz.*, 1-7, 2014. ISSN: 1788-1145.

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#### Articles, studies (6)

9. Kontor, E., Balsa-Budai, N., **Papp-Bata, Á.**, Kiss, M.: Az élelmiszercímkék szerepe az egészségtudatos táplálkozás megvalósításában: ösztönző és gátló tényezők.  
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10. Mile, M., **Papp-Bata, Á.**, Szakály, Z., Csiki, Z.: Szarkopenia befolyásolása táplálkozási módszerekkel.  
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12. **Papp-Bata, Á.**, Csiki, Z., Tósaki, Á., Szakály, Z.: Meggy mag kivonat - egy új termék a funkcionális élelmiszerek piacán?  
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DOI: <http://dx.doi.org/10.1002/ptr.5273>  
IF: 2.694
14. **Papp-Bata, Á.**, Csiki, Z., Nábrádi, A., Szakály, Z.: A probiotikumok táplálkozás-életleni és piaci jelentősége.  
*Tejgazdaság.* 74 (1-2), 47-51, 2014. ISSN: 1219-3224.



Conference presentations (2)

15. Mile, M., Csiki, Z., Bihari, K., **Papp-Bata, Á.**, Lekli, I.: A funkcionális edzés hatása a sarcopéniára 65 év felettek körében.  
In: A Magyar Allergológiai és Klinikai Immunológiai Társaság 47. Kongresszusa : Absztraktok. Szerk.: Novák Zoltán, Magyar Allergológiai és Klinikai Immunológiai Társaság, Debrecen, 41, 2019.
16. **Papp-Bata, Á.**, Jávor, A., Nagy, A., Monori, I., Prokisch, J., Csiki, Z., Szakály, Z.: Effects of Mg and Se Intake for Lambs on Meat Quality, Consumers' Dietary Attitudes and Health.  
In: V. AGRIMBA-AVA Congress : Program and abstracts, The International MBA Network of AGRIMBA, Debrecen, 33, 2017.

**Total IF of journals (all publications): 4,35**

**Total IF of journals (publications related to the dissertation): 1,214**

The Candidate's publication data submitted to the iDEa Tudóstér have been validated by DEENK on the basis of the Journal Citation Report (Impact Factor) database.

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