

VILNIUS UNIVERSITY
FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

MARIUS STASIŪNAITIS
IV-year, Global Marketing

Bachelor Thesis

**IMPACT OF NUTRI-SCORE LABEL ON CONSUMERS' INTENTION TO BUY FOOD
PRODUCTS IN LITHUANIA**

Student _____
(signature)

Supervisor: lec. Rokas Bekeris

(signature)

Date of submission: 2023-12-16

Registration No. : _____

Assessment of the academic paper:

(Date, assessment score, signature of the
chairman of the commission)

Vilnius, 2023

CONTENTS

List of Figures	3
INTRODUCTION	4
1. THEORETICAL ASPECTS OF FOOD LABELS AND IMPACT ON PURCHASE INTENTION	7
1.1. Food labels	7
1.1.1. Front of package and back of package labels and its purposes.....	7
1.1.2. Why are food products being labeled?.....	8
1.1.3. Different types of front of pack food labels	9
1.1.4. Current approaches of food labeling in the European Union	12
1.2. What is Nutri-Score label?.....	15
1.2.1. Purpose of Nutri-Score label.....	15
1.2.2. Development of Nutri-Score.....	16
1.2.3. Calculation of nutritional value of Nutri-Score	18
1.3. Purchase intention and existing experiments on it.....	19
1.3.1. Purchase intention and Nutri-Score comparison with other food labels.....	19
1.3.2. Impact of Nutri-Score Label on Consumer Purchase Intentions and Food Choices: Insights from Multiple Studies.....	20
2. RESEARCH METHODOLOGY.....	22
2.1. Purpose of the research	22
2.2. Research model	22
2.3. Development of the hypothesis.....	24
2.4. Data collection and instrument	26
2.5. Respondent selection, methods and scope of the research	27
3. DATA ANALYSIS AND RESULTS.....	28
3.1. Demographic and behavioral indicators of respondents	28
3.2. Reliability analysis.....	31
3.3. Descriptive statistics	32
3.4. Normality analysis	34
3.5. Results of hypothesis evaluation.....	36
CONCLUSIONS AND RECOMMENDATIONS	48
REFERENCES	51
SANTRAUKA.....	59
SUMMARY	60
ANNEXES.....	61

List of Figures

Figure 1 Guideline Daily Amounts (GDA) food label.....	10
Figure 2 Multiple Traffic Lights food label	10
Figure 3 The Health Star Rating food label	11
Figure 4 The Nutri-Score food label	12
Figure 5 Map of FoPNLs used in the European Union.....	14
Figure 6 Development of Nutri-Score label.....	17
Figure 7 Explanation of calculating scores of Nutri-Score labels.....	17
Figure 8 The Theory of Planned Behavior model adapted from Ajzen	24

INTRODUCTION

Recent years have seen a considerable rise in diet-related illnesses throughout the world, as well as an increase in the prevalence of poor eating patterns. There is an increasing demand for efficient technologies that can direct customers toward healthier selections as they are overrun with food options. Dietary labeling has come to light as a viable tactic to enhance consumer empowerment and encourage savvy dietary decisions. The Nutri-Score (NS) label has drawn a lot of interest among the several front-of-package labeling systems since it has the ability to convey the nutritional value of food items clearly and simply (European Parliament 1169, 2011) (Jones, 2020).

The Nutri-Score label is a five-color system that rates foods according to their overall nutritional content using a letter grade (from A to E) (C & S, 2017). It considers both beneficial and detrimental nutritional components and offers a summary signal that enables customers to quickly determine a product's healthfulness (Jones, 2020). Several European nations have already adopted the Nutri-Score label, and studies have indicated that it is effective in influencing customers' purchase decisions and encouraging healthier options (Egnell, et al., 2021) (A., R., & Long, 2016).

Worldwide, unhealthy eating habits and health problems they cause have gained substantial attention. Like many other countries, Lithuania is not exempt from these difficulties. A growing burden of non-communicable diseases (NCDs) is plaguing the nation because of the consumption of foods heavy in sugar, saturated fats, salt and deficient in fruits, vegetables, and whole grains. Obesity, cardiovascular disease, and type 2 diabetes are now more common than ever before, making it vital to encourage healthy eating habits among the population (Organization, 2018).

One potential tactic to deal with this problem is to implement efficient food labeling systems. Due of its clarity and simplicity, the Nutri-Score label has drawn a lot of attention among other labeling strategies. The Nutri-Score provides customers with a quick grasp of the nutritional content of food goods by assigning a color-coded letter and accompanying scale to food products. In numerous European nations, this approach has showed promise in influencing consumer behavior and boosting the consumption of healthy foods (Julia, Hercberg, & Touvier, Nutri-Score: Evidence of the effectiveness of the French front-of-pack nutrition label, 2020) (Larrivee, Abou Chakra, & Bélanger-Gravel, 2019).

However, it is crucial to consider cultural, social, and economic aspects particular to Lithuania while analyzing the specific impact of the Nutri-Score label in the context of that nation. Since there hasn't been much research done on the Nutri-Score label in Lithuania, more thorough

empirical research is required to understand how it could influence customers' decisions to purchase healthier food. Therefore, the purpose of this bachelor thesis is to examine how the Nutri-Score label affects customers' decision to purchase food products in Lithuania. This study seeks to contribute to the body of knowledge and offer insights on the efficacy of the Nutri-Score label as a tool for encouraging healthier food choices among Lithuanian consumers by investigating consumer attitudes, perceptions, and purchasing behavior.

The research problem: What is the impact of the Nutri-Score label on consumers' intention to buy food products in Lithuania?

The aim of the paper is to assess the influence of the Nutri-Score label on consumers' intention to purchase food products in Lithuania.

This study's objectives are:

1. To examine existing literature regarding food labels, its purposes, and regulations in European Union.
2. To evaluate existing experiments on Nutri-Score label and its impact on consumers' purchase intention.
3. To analyze the Nutri-Score label impact on customers' purchase intention to buy food products in Lithuania.
4. To provide conclusions of the research and recommendations to upcoming researchers and for those that use Nutri-Score labelling in one or another way.

Methods used. In this study, scientific literature is thoroughly examined, and a quantitative research method is used to systematically analyze collected and processed statistical data.

Limitations. Given the absence of existing research, the conclusions and recommendations may not adequately address all cases. Furthermore, the limitations in the data collection technique, which restrict its ability to capture the full diversity of the population, contribute to the concern that the research findings may lack generalizability to the entire population.

Structure of the paper. The bachelor thesis contains table of contents, introduction, literature review, research methodology, data analysis and results, conclusions and recommendations, reference list, summaries and annexes. All parts are essential to this work. In the introductory part relevance of the topic, research problem, aim, study's objectives, methods that were used,

limitations and structure of the paper are presented. The literature review examines various aspects related to food labels, current approaches to food labeling in the European Union and explores the Nutri-Score label, discussing its purpose, development, and calculation of nutritional value. Additionally, it reviews existing experiments and studies that investigate the impact of the Nutri-Score label on purchase intention. The purpose, objectives of the research, conceptual model, formulation of the research hypotheses, research technique, research instrument and sample size are all described in the research methodology part. The data analysis and results part present the findings of data analysis. Conclusions and recommendations are then provided, drawing insights from a study of scientific literature and research discoveries. These include findings from academic work, along with guidance for businesses, organizations, people and suggestions for future research.

1. THEORETICAL ASPECTS OF FOOD LABELS AND IMPACT ON PURCHASE INTENTION

1.1. Food labels

Food labels play a significant role in helping millions of consumers choose healthier foods. This was proven in a thorough analysis of several food label types, including front-of-package (FOP), back-of-package (BOP), labels on menus, and labels in grocery shops. The results clearly suggest that product labels do, in fact, cause a considerable change in how healthy consumers' diets are chosen (Siyi Shangguan MD, 2019).

1.1.1. Front of package and back of package labels and its purposes

Consumers can find out what is in packaged foods by reading the food labels. The amount of energy in kilojoules (kJ) and kilocalories (kcal), lipids, saturated fats (also known as "saturates"), carbs, sugars, protein, and salt per 100 grams (g) or 100 milliliters (ml) must all be listed on the label, according to legislation (PARLIAMENT, 2011). This information, which is required to be shown jointly, is most often located on the pack's back. In addition to the mandated nutrition labeling noted above, "front-of-pack" (FOP) nutrition labeling is another method of presenting nutritional information on the front of a package. These are designed to make it easier for customers to view the crucial nutrition information while buying items quickly and easily. The goal of front-of-pack nutrition labeling is to assist customers in making food decisions by providing simplified nutrition information on the front of product packaging. For example, the energy value alone or the energy value in conjunction with the amounts of fat, saturates, sugars, and salt. Alternatively, it can provide additional information on the overall nutritional quality of the food through symbols, letters, color codes, or other graphical formats, if they are supported by scientific research (Safety, 2020).

Back of package labels were the only ones that were often used for a long time. These often take the shape of a short chart displaying numerical data. According to the evidence, most consumers struggle to correctly comprehend these labels (Cowburn & Stockley, 2005). This has prompted continuous attempts to create better user-friendly designs for BOP labels (Temple & Fraser, Food labels: A critical assessment, 2014)

Many nations have recently implemented Front of package labels that are significantly simpler. There are currently several designs in use all around the world. The information on certain ingredients is displayed in some designs that are nutrient-specific, most frequently sodium (or

salt), sugar, and saturated fat. Warning labels that are only featured on food packaging if it has a disproportionately high amount of an undesirable component, such as sugar or salt, represent a new development. A summary label is a different design tactic. Here, the food's healthiness is denoted by a single number and expressed in a straightforward way, such as stars or a tick. The efficiency of these many FOP designs has been the subject of several studies, but the best design is still up for debate (Temple & Fraser, Food labels: A critical assessment, 2014).

Before choosing a food item, most supermarket aisle customers often don't take more than a few seconds to read the labels (Sanjari, Jahn, & Boztug, 2017). As a result, rather than the back of package label, which is far more extensive, the straightforward front of package label plays the dominating role for most consumers. Therefore, it is critical that FOP labels be well-designed to be as useful as possible in assisting consumers in making healthy dietary choices. How and why food products are being labeled will be discussed later in upcoming subchapters.

1.1.2. Why are food products being labeled?

Food companies are very interested in utilizing product labels to educate consumers in the moment of purchase about the features of their goods and brands. The container, which is the producer's first point of contact with the consumer, may convey information on the label that helps the producer to establish a connection with the consumer, distinguish the product from competitors, induce purchase and foster brand loyalty. Food producers are also utilizing labels to tell consumers about the health and safety aspects of their goods, assuming that many consumers actively seek information about food items to satisfy their health demands and requirements (Meijer, Detzel, Grunert, Robert, & Stancu, 2021).

The fact that foods are labeled is something that interests consumers. Over the past few decades, consumer interest in food quality has grown significantly, encompassing a growing number of quality aspects. Many consumers are concerned in the products' healthiness, their origin, their components, the method they were created, and whether or not they are organic in addition to aspects like flavor and look. To have any impact on customer choice, such credibility features must be conveyed, and this communication must be credible (Grunert & Wills, 2007). Food labels can serve this purpose. As a result, although there are variations within consumer groups, consumers' responses when questioned about their interest in food labels are generally favorable (Fernqvist & Ekelund, 2014). For instance, studies on consumer interest in nutrition labels have revealed that women are more interested in labels than men, older consumers are more interested in labels than younger consumers, and consumers with diet-related health issues are more interested in labels than those who do not (Loureiro, Gracia, & Rodolfo M. Nayga, 2006).

The level of interest varies by product type as well, with highly processed goods that offer less transparency to consumers receiving the highest attention (Grunert & Wills, 2007).

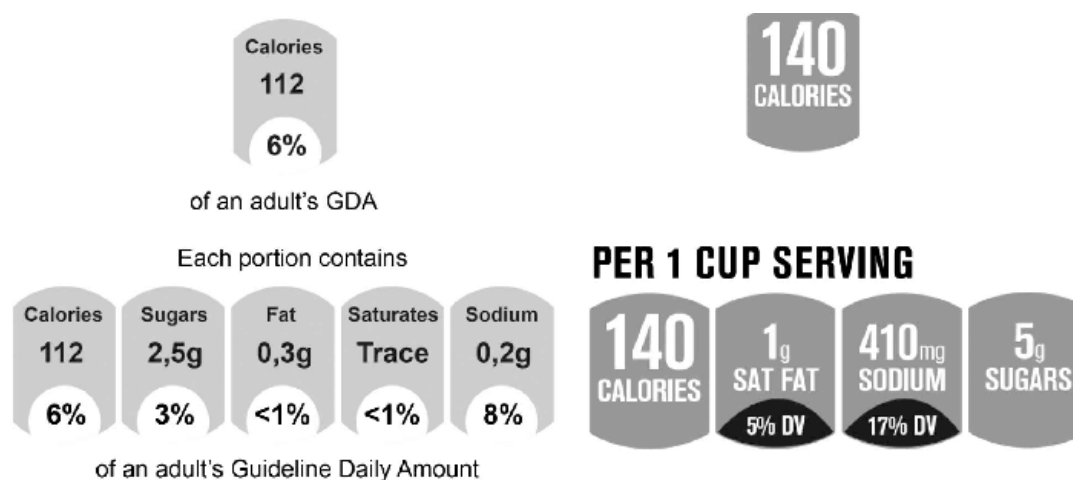
As a result, both food producers and consumers are interested in the labeling of food products. Labeling is also seen as a policy tool that can help the transition to a healthier and more sustainable food system, such as the European Union's Farm to Fork Strategy (Commission, 2020). This triangular support for food labeling does not, however, indicate that the interests of the stakeholders are in line with the consequences that such labels have on the food industry or that the stakeholders agree on the information that labels should contain and how this information should be supplied. There may be conflicts among stakeholders over the specifics of what information should be included on food labels and how it should be displayed, even though food labeling is endorsed by both food producers and consumers as a way to create a healthier and more sustainable food system. To ensure that food labeling satisfies the requirements of all stakeholders and works as an effective policy instrument, good communication and collaboration are crucial (Meijer, Detzel, Grunert, Robert, & Stancu, 2021).

1.1.3. Different types of front of pack food labels

The types and styles of FOP labels are briefly described in this section. They are split into two categories. The first category is nutrient-specific. The label prominently displays the amount of calories and several other ingredients, most frequently sugar, sodium (or salt), and saturated fat. It's common to include total fat. The quantities are given per serving. Contrarily, summary labels employ an algorithm to convert the food's constituent parts into a single value that indicates how nutritious or harmful it is. Nutrient-specific labels concentrate on ingredients that are dangerous if ingested in excess, whereas summary labels cover a spectrum from the healthiest foods to the unhealthiest foods. This is a key distinction between the two designs.

The Guideline Daily Amounts (GDA) label is one such nutrient-specific labeling scheme (Federation, 2019). The serving size of these ingredients and the energy content are listed on the label (Figure 1). The numbers are also given as a proportion of the recommended daily consumption for adults. Mexico makes use of the label. The GDA and slightly modified versions go by the names Facts Up Front, Reference Intake label, and Daily Intake Guide. (Temple, Front-of-package food labels: A narrative review, 2020)

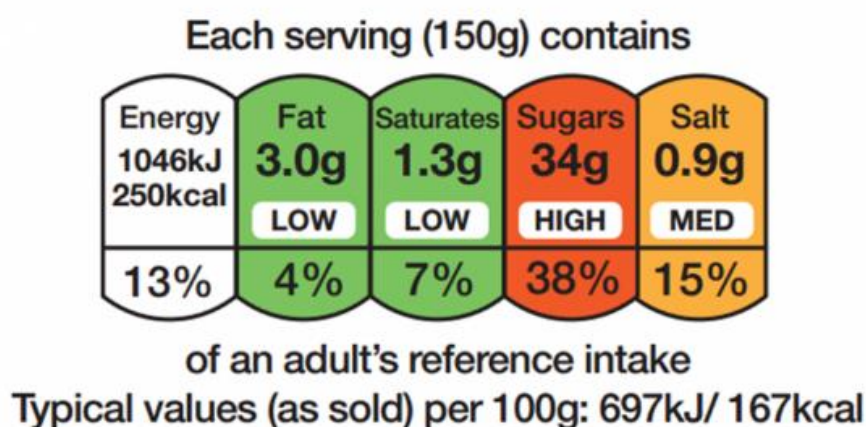
Figure 1 Guideline Daily Amounts (GDA) food label



Source: Health promotion journal of Australia: official journal of Australian Association of Health Promotion Professionals 22(1):63-7, 2011

Traffic Lights or Multiple Traffic Lights (MTL) is another nutrient-specific label design. The layout is relatively similar to GDA, except MTL uses traffic lights to show if a food item has a high (red), medium (orange), or low (green) quantity of saturated fat, sugar, and salt (and occasionally, total fat). The system was created in the UK, one of the nations that uses it. In Figure 2, an MTL label is demonstrated (Care, 2016).

Figure 2 Multiple Traffic Lights food label



Source: British Nutrition Foundation, 2020

Health warnings are a freshly created FOP label that is generating a lot of interest. Typically, the label is just a short text phrase like "high in sodium." Health warnings are consequently less informative than MTL because there are now just two categories for food

ingredients (warning or no warning), as opposed to three previously. Health warnings were first introduced in Chile, which regulated their usage for items rich in sugar, fats, salt, or calories in 2016 (Carreño, 2015). Several additional nations have adopted this style of FOP label (Reyes, et al., 2019). The need of warning labels on beverage containers with added sugar has drawn the most notice. This public health policy has already been put into practice in Brazil, Uruguay, Canada, and several US states (Temple, Front-of-package food labels: A narrative review, 2020).

NuVal is one of the designs for FOP labels that have been created that uses a single summary value. On a scale of 1-100, this determines the food's total nutritional score. To receive a high score, the food must include a minimum level of protein, dietary fiber, and numerous vitamins and minerals, as well as a maximum amount of fat, saturated fat, and salt (Katz, Njike, Rhee, Reingold, & Ayoob, 2010) (Program, 2019).

Guiding Stars is an additional system. The FOP label gives the meal one, two, or three stars depending on how healthy it is. Only the absence of star information allows customers to infer a zero-star rating. The following dietary components are considered while calculating the score: calories, saturated fat, sugar, salt, fruits and vegetables, protein, and fiber (Stars, 2019). Other culinary ingredients could also be present. The Institute of Medicine (now the National Academy of Medicine) suggested a method in 2011 that served as the basis for Guiding Stars. Although a chain of supermarkets in Canada adopted it, the use of this FOP label is primarily restricted to the USA (Fischer, et al., 2011).

Australia and New Zealand both employ the Health Star Rating (HSR) system (Health, 2016). The label shows a star rating from one-half to five stars. HSR can be seen in a variety of places on labels. Some meals just display the product's overall HSR (Fig. 3, image on the left). Other foods provide data on their calorie content, saturated fat content, sugar content, and salt content (Figure 3, image on the right). If the amount is high or low, other ingredients might be added, such as calcium and fiber (Temple, Front-of-package food labels: A narrative review, 2020).

Figure 3 The Health Star Rating food label



Source: New Zealand Food Safety, 2023

The simplest explanation FOP labels only show a single symbol, like a tick. If the food satisfies specific requirements that denote that the food is healthy, the symbol is present on the food package. There have been several variations of this symbol created (Foundation, 2020). It was created in the Netherlands in 2006 and is now widely used across the world. Another variation of this design is the Keyhole, also known as the Nordic Keyhole (Agency, 2022). The emblem is a keyhole, as its name suggests. The Nordic nations of Sweden, Denmark, and Norway are currently using it after it was first created in Sweden in 1989. Smart Choices is the name given to the tick sign created in the USA. Around 2009, it was used for a brief while. The tick icon has also been used for meals that are good for the heart (Fischer, et al., 2011).

The Nutri-Score, or 5-CNL (5-Colour Nutrition Label) principal component of this thesis, this label provides its evaluation from letter A (healthiest) to E (least healthy). Each of the five letters on the label, as seen in Figure 4, is colored differently, but the letter that denotes the food's value is extended. Saturated fat, sugar, salt, and other minerals, as well as vitamins, protein, dietary fiber, n-3 fatty acids, fruits, vegetables, and whole grains, are all included in the UK Food Standard Agency score. The system makes use of a nutrient profiling method that was initiated by the UK's Food Standards Agency, however Nutri-Score label was created in France, where it is widely used to various food items (Julia, et al., 2014).

Figure 4 The Nutri-Score food label



Source: Bayn Solutions, 2022

1.1.4. Current approaches of food labeling in the European Union

Consumers today are exposed to a wide variety of food options, and the food sector has a significant impact on consumer behavior. The industry is primarily marketing and pushing the sales of ultra-processed food in this setting, which generates large profits (White, et al., 2020). In such an environment, customers need information regarding the nutritional value of these items that is simple to grasp. Unfortunately, current food labeling is complex, and people need to have high levels of functional and nutritional literacy to evaluate, comprehend, and take action on

information about nutrients (Krause, Sommerhalder, Beer-Borst, & Abel, 2018). New legal strategies for front-of-pack nutrition labels (FoPNLs) are required to aid consumers in this process. FoPNLs assist customers make healthier decisions by educating them about the nutritional value of food and non-alcoholic beverages. This subchapter examines government approved FoPNLs used in the EU and gives an overview of the labels that are currently in use. Thus, in the context of the ongoing discussion regarding a new standard for FoPNLs at the EU level, the review helps to improve understanding of existing types of labels, their use, and their benefits and drawbacks. (Peonides M. , et al., 2022)

The EU has regulations in place for food labeling. According to the Food Information to Consumers Regulation (European Parliament 1169, 2011), the majority of food goods must have a back-of-pack nutrition declaration that lists the number of fats, carbs, sugars, protein, and salt in each serving. The values can be supplemented by the portion size and value and are to be computed per 100 grams/100 milliliters. Additionally, in some circumstances, Article 35(1) authorizes extra nutrition labeling on the front of food packaging, and Article 35(2) allows member states to suggest such labeling. However, member states are not permitted to make such labeling obligatory (Gokani, 2022). According to this Article, if the following conditions are met, nutritional information "may be given by other forms of expression and/or presented using graphical forms or symbols" in addition to only words or figures. The information's content requirements state that it must be "based on sound and scientifically valid consumer research," "consumer-friendly," "supported by scientifically valid evidence of understanding of such forms of expression or presentation by the average consumer," and "objective and non-discriminatory." The information must be "the result of consultation with a wide range of stakeholder groups" from a procedural standpoint. Despite the fact that existing research emphasizes how crucial it is to simplify nutritional information, there is no set structure for FoPNLs among the member states (Browne, Coffey, Cook, Meiklejohn, & Palermo, 2019). An overview of the FoPNLs utilized in the EU and detailed below is shown in Figure 5. The global map solely displays EU member states (South, 2011).

To provide more knowledge about every FoPNL mentioned in the Figure 5. Each of them will be briefly described.

Figure 5 Map of FoPNLs used in the European Union



Source: International Journal of Health Governance, Vol. 27 No. 4, 2020

The Green Keyhole was developed by the national nutrition agency of Sweden and debuted in 1989. It is utilized by the business on a voluntary basis, similar to other positive endorsement logos. The food safety agencies in Denmark, Iceland, Norway, and Sweden used the Keyhole emblem to illustrate a trademarked symbol. The tool's purpose is to enable people to adopt a healthy diet in accordance with the official dietary recommendations (Authority & Health, 2008). Denmark and Lithuania both received The Green Keyhole in 2009 and 2013, respectively (Co-operation, 2021).

Little heart. In the year 1992, Slovenia was one of the first nations to use this title. The "Protect your Health" printed quotation on the Little Heart or Protective Food label denotes that a pre-packaged product satisfies specific dietary requirements (Peonides M. , et al., 2022). In 2000, the Finish Heart Symbol was unveiled. This optional label, which looks like a heart with the words "better choice" surrounded in it, promotes "better-for-you choices" (Kelly & Jewell, 2018). The Finnish Heart Association and the Finnish Diabetic Association created the label's requirements.

In 2008, Poland and the Czech Republic both established the Healthy Choice label. It is administered by the Choices International Foundation and, like other labels that offer a favorable recommendation, is given to foods that have the right amounts of saturated fat, trans fatty acids, added sugar, salt and fiber in addition to the right total calorie counts (Peonides M. , et al., 2022).

The Nutri-Score label has been described before, so there is not much to say about it, but a few facts are worth mentioning. In the EU, the FoPNL that is most usually used is the Nutri-Score. It is seen to be a useful tool for influencing customers to make healthier decisions (De Temmerman, Heeremans, Slabbinck, & Vermeir, 2021).

The EU Commission accepted the NutrInform label as an optional FoPNL in January 2020 after the Italian Ministry of Economics made the suggestion (European Parliament 1169, 2011). The label has five batteries (calorie, fat, saturated fat, sugar, and salt) that show how much of each nutrient is included in the manufacturer's suggested serving size and what proportion of an adult's reference consumption this represents (battery, 2021). The label, according to observers, was developed in opposition to the Nutri-Score and in response to the requirements of the Italian food sector (Morrison, 2020).

As shown in Figure 5, the most common label in Europe is Nutri-Score, it's spread across western side of Europe. In northern side Green Keyhole is the widest developed label. It is difficult to unequivocally evaluate the situation in central and southern Europe, there are several labels that dominate, so it's difficult to decide on one of them that dominates there.

1.2. What is Nutri-Score label?

A healthier diet might enhance the health of hundreds of millions of people and avoid millions of premature deaths in wealthy nations (Afshin, Sur, & Fay, 2019). The Nutri-Score is a front-of-pack nutrition label with summary graded color coding that is based on a five-color nutritional scale (from dark green to dark orange) and letters, from A to E, to maximize logo accessibility and comprehension by consumers of food goods (C & S, 2017). The Nutri-Score nutrition label, which is meant to be attached on the front of food packaging, intends to provide customers with clear, concise information about the total nutritional worth of meals so they can make more educated and healthful purchasing decisions. The Nutri-Score's second goal is to persuade producers to enhance the nutritional value of their goods through reformulations and/or innovations so that they will appear better on the Nutri-Score color scale and be less damaging to consumers (Hercberg, Touvier, & Salas-Salvado, 2021).

1.2.1. Purpose of Nutri-Score label

The extensive, fair, and impartial nature of the evidence on which the Nutri-Score is based is a key feature. Its development is based on solid scientific evidence, including information from more than 40 studies that were published in international peer-reviewed scientific journals. These

studies validated its calculation method and its graphic format, as well as its efficiency and superiority to other labels that have been adopted in other nations or supported by lobbying organizations with ties to the food industry (Hercberg, Touvier, & Salas-Salvado, 2021).

The Nutri-Score approaches nutrition in a reductionist manner. A food item's worth is determined by its composition in terms of a select few nutrients and its energy density. This method makes sense when contrasting two comparable objects. For instance, if given the choice to choose between raw fruit juice and the same juice with added sugar, the sugar-enriched alternative will be seen to be objectively less healthy and will have a lower nutritional score. However, nutrition is a complicated topic, and a food item's (un-)healthiness depends greatly on the circumstances of the consumer. The nutritional score, for instance, penalizes food products for having a lot of calories. Fewer calories would be healthy for most Western consumers because obesity is a problem in Western societies. For those who are underweight, whether from a lack of access to food or an eating disorder, the same cannot be true. In the context of the Nutri-Score in industrialized nations, the former is unlikely to be a worry, while the latter may be. The obvious labelling of high-calorie items with a dark orange Nutri-Score may serve to promote the poor eating and perceptual tendencies of patients with bulimia (Hau & Lange, 2023).

A food item's value must also be considered in the context of usual consumption levels. Variety is a key component of a healthy diet. Given our limited understanding of good nutrition, it may be recommended to eat a range of plant and animal-based foods, which will likely increase the diet's overall healthfulness (Pollan, 2010). This, however, cannot be included in a labeling scheme like the Nutri-Score, which categorizes food products alone. Even though apples have the highest Nutri-Score of A, which indicates that they are the healthiest food, a person who only ate apples would undoubtedly have several nutritional deficiencies (Hau & Lange, 2023).

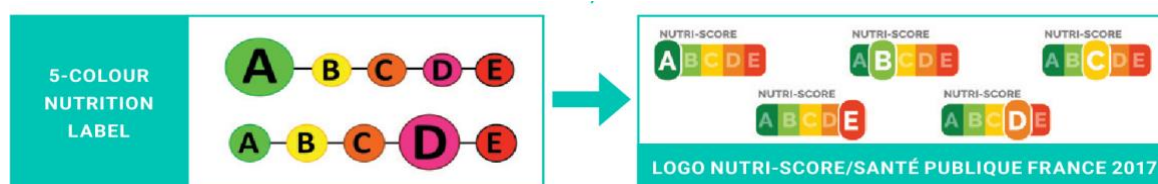
1.2.2. Development of Nutri-Score

A significant amount of earlier nutritional scientific research was included into the creation of Nutri-Score. A nutritional profile system that was initially created by researchers at the University of Oxford for the UK Food Standard Agency with the aim of establishing guidelines for regulating television advertising to children served as the foundation for the computation used to assign the Nutri-Score colors and letters (M, P, L, & A, 2005) (C, P, & M, 2008) (M, Scarborough, & Lobstein, Defining “healthy” and “unhealthy” food and drinks for TV advertising to children, 2009). To justify the nutrients or components included in the algorithm, restrict their quantity through sensitivity experiments, and eliminate redundancy between elements, a thorough procedure including several research has been performed. For instance, it has been demonstrated

that include fruits and vegetables in the calculation is a superb proxy for the number of certain vitamins, such as vitamin C and pro-vitamin A (beta carotene) (M, P, L, & A, 2005). Similar to this, proteins were chosen as a stand-in for the amount of minerals and trace elements, such as calcium and iron, in dietary items. Finally, it was possible to identify and only include nutrients and components in the final global nutritional score that were important for nutritional health and whose use should either be restricted or encouraged in the interest of public health (Hercberg, Touvier, & Salas-Salvado, 2021).

In the UK, TV commercials for kid-friendly meals were initially meant to be approved (or not) using the final nutrition profile system, also known as FSA NPS. The French High Council of Public Health (HCSP), a knowledgeable, independent organization that offers public health recommendations to legislators, conducted modeling studies on this approach in 2015 ((HCSP), 2015). From A (dark green) through E (dark orange), this agency established the four criteria defining the five colors and letters of the Nutri-Score (Figure 6). To improve the evidence of the variations in nutritional quality within these three food groups, the HCSP made some specific adjustments to the original FSA NPS for the three food categories of beverages, cheeses, and added fats (as suggested by the French Food Safety Agency ANSES and the scientific designers of the Nutri-Score). Contrary to popular belief, it was not the fact that France is a "cheese country" that caused these changes, but rather the fact that the initial algorithm lumped all cheeses into the same category (E), failing to account for the contribution of various food items within this food group to nutritional recommendations (pertaining to dairy products), particularly regarding calcium and fat content (Hercberg, Touvier, & Salas-Salvado, 2021). The cheeses are primarily distributed in categories D and E with some in C, allowing consumers to visualize their relative differences in nutritional composition. The HCSP made a minor adjustment to the algorithm to consider proteins as a proxy for calcium content. The same justification was used to differentiate items within these categories in accordance with public health dietary guidelines for beverages and added fats. The French Public Health Agency (Santé Publique France), which developed Nutri-Score, has since included olive oil (as well as nuts and rapeseed oils) as positive and desirable elements in the algorithm, moving these products from D to C, based on scientific data (ANSES, 2019). The Mediterranean diet model and the dietary guidelines of the majority of European nations both state that added fats should only be used in moderation, with a preference for certain vegetable oils, making Category C the best potential class for added fats (Hercberg, Touvier, & Salas-Salvado, 2021).

Figure 6 Development of Nutri-Score label

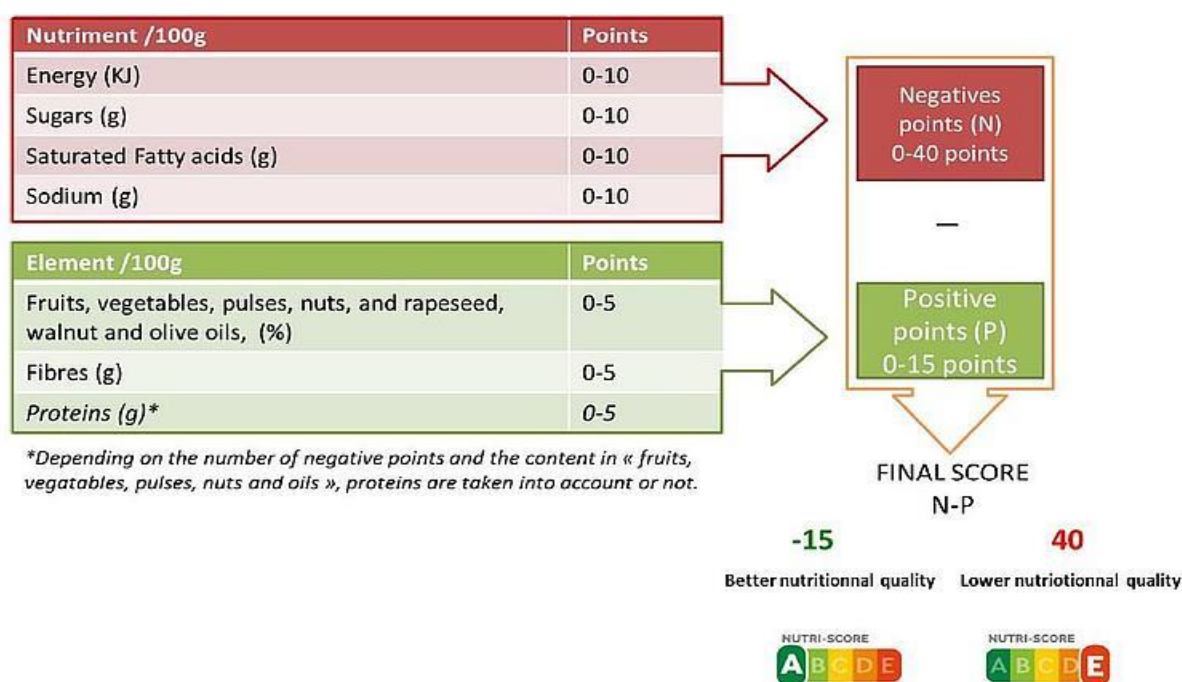


Source: Julià, C.R., & Hercberg, S., 2017

1.2.3. Calculation of nutritional value of Nutri-Score

The Nutri-Score is a voluntary front-of-pack labeling system that enables customers to quickly determine a food's nutritional content in the context of an optimally healthy diet (Agriculture, 2020 March). Positive and negative nutrients are balanced out against one another using a point system (France, 2019). It is possible to score 0 to 10 points for the four elements that are deemed harmful to health, including total energy content, saturated fatty acid content, sugar content, and salt content. Thus, the worst outcome is a score of no more than 40. In the second stage, three positive ingredient categories - fiber, protein, and the percentage of fruit, vegetables, and nuts - are each given a score between 0 and 5. The score for the unfavorable category is reduced by the points for these good aspects (a maximum of 15 points can be earned) (Figure 7).

Figure 7 Explanation of calculating scores of Nutri-Score labels



Source: France S., 2022

The product is categorized in the Nutri-Score color and letter combination based on this computation, which food industry owners perform on their own initiative and commonly print on the front of pre-packaged food (Institut, 2019). For an easier calculation, there are even a few different online Nutri-Score calculators, which can be used widely for everyone. People just need to know how much kJ, sugar, saturated fats, salt, protein, and fiber are in grams and how much vegetables, fruit, and nuts in percentages are in the food products which are under consideration. This calculator's objective is to demonstrate how to calculate the Nutri-Score. Important Information: this project is unofficial, all computations and information are provided as guidance. Please refer to the Santé publique France's official calculating table. (Nutrirechner, 2022).

1.3. Purchase intention and existing experiments on it

The intention to buy is another crucial aspect of food selection. More than ever, marketing initiatives that aim to persuade consumers to buy a certain product have an impact on their purchasing intentions. According to research by (Huang & Lu, 2016), consumers believe that the nutritional value of food goods has a significant role in determining whether or not they will make a purchase. Consumers are influenced by nutrition information at the moment of purchase and are prompted to consider it before making a decision by nutrition labeling (Gomez, Werle, & Corneille, 2017). Consumer decisions may be impacted by beliefs about nutritional quality that are modified by nutritional labeling (Shepherd, Sparks, & Guthrie, 1995). Consumers might accurately assess items based on their nutritional quality and then choose which ones to consume by using the Nutri-Score label, in particular (Egnell, Talati, Hercberg, Pettigrew, & Julia, 2018).

1.3.1. Purchase intention and Nutri-Score comparison with other food labels

Mixed scientific evidence supports the usage of the Nutri-score. For instance, research by (Egnell, Talati, Hercberg, Pettigrew, & Julia, 2018) revealed that although the Nutri-score was acknowledged as the best nutrition label to assist consumers in correctly ranking products according to their nutritional quality, it was also the least trusted and desired as a required front-of-package label, which may be attributed to the label's unfavorable nature. Additionally, research revealed that consumers understood the Nutri-Score label better than the Green Keyhole and Traffic-Light labels (Rijksoverheid, 2019).

In another research the Nutri-Score was also found to have a favorable effect on groups that had less awareness about the quality of food (Julia, Hercberg, & Organization, Development of a new front-of-pack nutrition label in France: The five-colour Nutri-Score, 2017). The Nutri-

Score demonstrates strong consistency with nutritional guidelines and helps consumers grasp the variety in nutritional quality of food items. Its nutrition label considers more nutritional information than the Green Keyhole label, which only appears in one format and solely assesses fat and fiber (Edelenyi, et al., 2019). The Nutri-Score has a more straightforward graphical layout than the Traffic-Light nutrition label, but it uses a more complex algorithm to calculate the values. Furthermore, Nutri-score performed best at improving understanding of product healthiness in an experimental study spanning 12 countries on consumers' perceptions of five front-of-package nutrition labels, including the Nutri-score (Talati, Egnell, Hercberg, Julia, & Pettigrew, 2019).

1.3.2. Impact of Nutri-Score label on consumer purchase intentions and food choices

In a study conducted by Frans Folkvord, Niki Bergmans and Sara Pabian, the impact of the Nutri-Score label on consumer purchase intentions was examined. The study involved 196 respondents, and after eliminating outliers, data from 192 participants were analyzed. The respondents were divided into two conditions: one group exposed to food products with the Nutri-Score label and the other group without the label. The results showed that the addition of the Nutri-Score label did not significantly affect consumer attitudes, taste perception, or purchase intentions. Bayesian ANOVAs supported the null hypothesis, indicating that the Nutri-Score label had no impact on consumers' intention to purchase food products. Despite the Nutri-Score label indicating healthier elements, consumers did not show increased purchase intentions for products with the label. These findings suggest that the Nutri-Score label did not convincingly influence consumers' purchasing decisions (Folkvord, Bergmans, & Pabian, 2021).

In a study conducted by Manon Egnell, Pilar Galan, Morgane Fialon, Mathilde Touvier, Sandrine Péneau, Emmanuelle Kesse-Guyot, Serge Hercberg and Chantal Julia, three parallel group randomized controlled trials were conducted to investigate the effect of the Nutri-Score labeling on purchasing intentions compared to Reference Intakes and no label. The trials involved 1956 individuals engaged in food shopping, and the data were collected using an experimental online supermarket. The findings revealed that the Nutri-Score labeling led to a reduction in the amount of food goods purchased, particularly pre-packaged and less nutritious products. Participants in the Nutri-Score group showed a tendency to purchase fewer processed or ultra-processed items and more fruits and seafood products compared to the groups without labels or with reference intake labels. The presence of the Nutri-Score label also influenced participants to prefer unpacked products, such as unprocessed fruits and meats, and discouraged the purchase of manufactured processed or ultra-processed items. These results highlight the positive impact of the Nutri-Score label on participants' purchasing tendencies towards healthier food choices. The

study emphasizes the need for specialized messaging and European-level labeling standardization (Egnell, et al., 2021).

The study conducted by Joyce De Temmerman, Eva Heeremans, Hendrik Slabbinck and Iris Vermeir aimed to investigate the impact of the Nutri-Score nutrition label on consumers' perceptions of healthiness and purchase intentions regarding ready-to-eat meals. The researchers selected equally appealing products from different Nutri-Score categories and conducted a primary study with 292 participants, measuring perceived healthiness, purchase intention, tastiness, and quality. The findings revealed that the presence of the Nutri-Score increased perceptions of healthiness and purchase intentions. Additionally, Nutri-Score categories had a significant effect on perceived quality, with Nutri-Score A items receiving higher ratings than C products. In a follow-up study with 415 participants, the researchers explored the effects of Nutri-Score across all five categories and its influence on factory brands and private labels. The results indicated that the NS facilitated consumers' ability to evaluate product healthiness and influenced purchase intentions for Nutri-Score categories A and B. Regardless of the Nutri-Score presence, there were no substantial differences in purchase intentions for categories C, D, and E. Overall, the Nutri-Score labeling system was found to enhance consumers' perception of healthiness and encourage the purchase of healthier options without significantly decreasing sales of less healthy items (De Temmerman, Heeremans, Slabbinck, & Vermeir, 2021).

2. RESEARCH METHODOLOGY

2.1. Purpose of the research

Empirical research is carried out to gather and examine the primary data and determine whether Nutri-Score label has a positive or negative impact on consumers' intention to buy food products. The primary objective of this research is to evaluate the impact of the Nutri-Score labeling system on the purchasing intentions of consumers in Lithuania. This study seeks to address a critical gap in existing literature by investigating how the Nutri-Score label, a front-of-pack nutrition label, influences consumer behavior in the Lithuanian context.

Object of the empirical research is to investigate the impact of the Nutri-Score labeling system on consumer purchasing behavior in Lithuania. The study focuses on understanding how the presence of the Nutri-Score label influences consumers' decisions when choosing food products.

Aim of the empirical research is to provide a comprehensive assessment of the effectiveness of the Nutri-Score label in the Lithuanian context. This includes evaluating its influence on consumer awareness, perception, and purchasing intentions regarding food products.

Empirical research objectives:

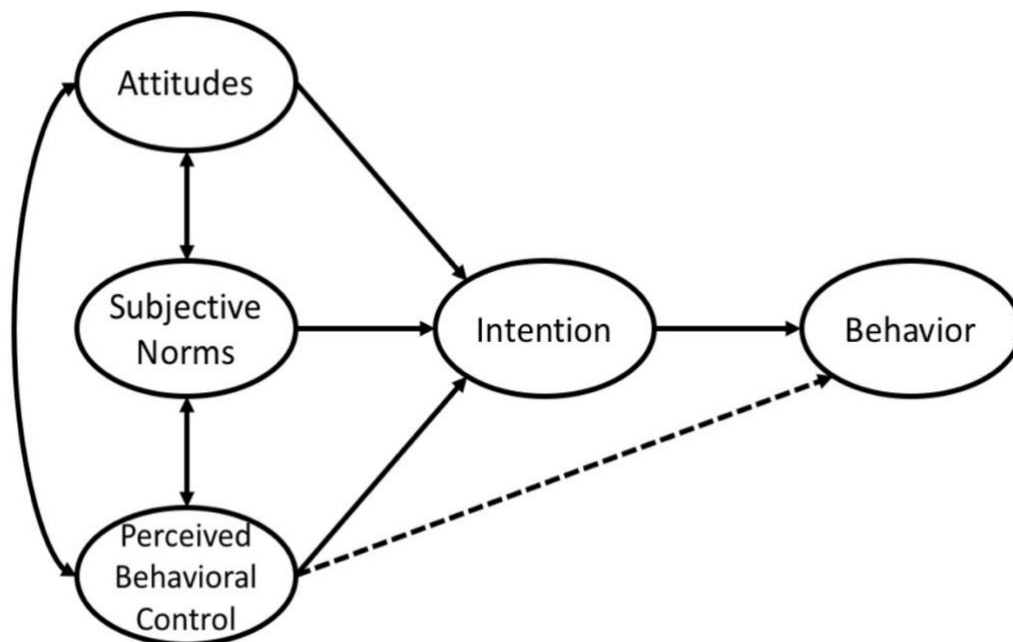
1. To build a research (conceptual) model for study.
2. To formulate research hypothesis.
3. To set up a system for gathering data.
4. To gather and examine data.
5. To use different analysis to test hypotheses.
6. To draw conclusions and offer recommendations.

2.2. Research model

The social psychology model known as the Planned Behavior Model was selected due to its track record of understanding and forecasting consumer behavior. It is an extension of Icek Ajzen's Theory of Reasoned Action (TRA), which he developed in the late 1980s. It has been widely used in a number of areas, such as nutrition and health-related decision-making. The Planned Behavior Model is a structured framework that includes behavioral, psychological, and attitudinal components. It is a useful tool for examining how consumers respond to nutritional

labelling systems like the Nutri-Score. It is the perfect instrument to dissect the intricacies of consumer decision-making in this situation because of its strong theoretical underpinnings (Ajzen, 2020).

Figure 8 The Theory of Planned Behavior model adapted from Ajzen



Source: Rebecca Sansom, Brigham Young University, 2023

Key Constructs:

Attitudes: This element reflects an individual's overall evaluation of a behavior. In the context of this study, it relates to consumers' attitudes towards purchasing food products with the Nutri-Score label. Positive attitudes towards the label are anticipated to positively influence purchasing intentions (Ajzen, 2020). How would you rate your understanding of the Nutri-Score label?; Do you believe Nutri-Score labels provide useful information about the nutritional content of a food product?; Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)? These research questions are example of Attitude construct.

Subjective Norms: Subjective norms summarize the perceived social pressure or influence that significant other, such as family, friends, or societal norms, apply on an individual's behavior (Ajzen, 2020). Within this study, it refers to the perceived influence of others on the decision to purchase Nutri-Score labeled products. Do you recognize the “Nutri-Score” label?; On a scale of 1-5, how important is the Nutri-Score label to you when making food purchasing decisions?; On a scale of 1-5, how often does the Nutri-Score label influence your decision to buy a food product?; To what extent do recommendations or preferences of friends or family influence

your choice of Nutri-Score labeled products? These research questions are example of Subjective Norms.

Perceived Behavioral Control: This construct surrounds an individual's perception of the ease or difficulty in performing a behavior (Ajzen, 2020). In the context of this study, it relates to consumers' perceived control over their ability to choose and purchase food products based on the Nutri-Score label. On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?; To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?; How much trust do you have in the accuracy of the information provided by the Nutri-Score label?; How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle (rate on a scale of 1-5)? These research questions are example of Perceived Behavioral Control.

Behavioral Intention: Behavioral intention serves as a proximal determinant of actual behavior. It signifies an individual's expressed likelihood or intention to perform a certain behavior (Ajzen, 2020). In this case, the intention to purchase food products with the Nutri-Score label.

2.3. Development of the hypothesis

In this section, research hypotheses accompanied by theoretical justifications will be provided. To find out if these factors affect Lithuanian customers' intention to buy food products labelled with the Nutri-Score, hypotheses will be tested.

H1: Understanding of Nutri-Score label positively impacts consumers' willingness to pay a slightly higher price for a food product with a higher Nutri-Score rating.

According to the hypothesis, consumers who are aware of and understand the Nutri-Score label will be likely to spend more money on products that have a higher nutritional rating. The idea that informed consumers tend to choose healthier options, even if they possibly cost a little bit more, is consistent with this (Birgit Gassler, 2023).

H2: Influence of Peers and Social Circles positively influence decision to buy Nutri-Score labeled food products.

Hypothesis acknowledges that consumer behavior has a social component. It suggests that when it comes to selecting products with the Nutri-Score label, people are influenced by the beliefs and actions of their friends and social circles (Ducrot, 2022).

H3: Perceived health benefits of Nutri-Score label positively correlate with trust in label accuracy.

Customers are more likely to believe the accuracy of the Nutri-Score label if they believe it will improve their health, according to a hypothesis. This supports the idea that, in the eyes of consumers, perceived benefits and trust are related (W. Widyastuti, 2020).

H4: Belief that Nutri-Score labels provide useful information about the nutritional content of a food product positively correlate with the importance of Nutri-Score label when making food purchasing decisions.

Hypothesis centers on the idea that the Nutri-Score label provides useful details about a product's nutritional makeup. It assumes that those who agree to this theory will give the label more weight when making decisions. This is consistent with the idea that behavioral intention is significantly predicted by perceived usefulness (Michael S. Dohan, 2013).

H5: People with higher monthly salary (1501eu and over) tend to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option).

Hypothesis addresses the potential influence of income on consumer choices. It states that individuals with higher monthly salaries are more inclined to prioritize healthier options, as indicated by the Nutri-Score label. This aligns with research suggesting that higher income individuals are more likely to invest in their health (Dean T Jamison, 2006).

H6: People with higher education level tend to choose clear information/nutritional awareness of Nutri-Score labeled food products as a main factor affecting their decision to buy it.

Hypothesis acknowledges the role of education in shaping consumer preferences. It proposes that individuals with higher levels of education are more likely to value clear nutritional information provided by the Nutri-Score label. This is consistent with studies emphasizing the impact of education on health-related decisions (David M. Cutler, 2006).

H7: People with “very active” or higher overall level of physical activity tend to recognize “Nutri-Score” label better than others.

Examines the relationship between degree of physical activity and label recognition. It indicates that people who are more physically active have a higher chance of being aware of and recognizing

the Nutri-Score label. This supports the idea that people who are concerned about their health are more likely to pay attention to dietary information (Goetzke & Spiller, 2014).

H8: Participants over 55 years old do not recognize Nutri-Score label.

Hypothesis discusses possible variations in label recognition that could be caused by age. It suggests that, in comparison to younger participants, those over 55 may be less able to identify the Nutri-Score label. This is in line with studies showing older people might not be as familiar with the latest nutritional labelling systems (Jackey, Cotugna, & Orsega-Smith, 2017).

H9: People who tend to spend more than 300€ on food products monthly are willing to pay a slightly higher price for a food product with a higher Nutri-Score rating.

Hypothesis considers the relationship between monthly spending on food and willingness to invest in higher-rated Nutri-Score products. It suggests that individuals who allocate a higher budget for food products may be more inclined to pay more for healthier options. This aligns with the idea that higher spending may indicate a greater emphasis on health and nutrition (Kousar, Sadaf, Makhdum, & Ijaz, 2017).

2.4. Data collection and instrument

The chosen quantitative research methodology is essential for examining how the Nutri-Score label affects consumers' intentions to make purchases. This study attempts to collect standardized and quantitative data by using a structured survey-based method. This methodological decision offers a transparent framework for gathering feedback from a wide range of participants, making it possible to conduct an in-depth examination of consumer behavior. The survey has been carefully crafted to cover important topics related to customers' attitudes and plans for food items bearing the Nutri-Score label.

The instrument employed for gathering data is an online survey. The questionnaire was conducted on “Google Forms”, this approach was selected due to its affordability, practicality, and broad applicability. The questionnaire has been carefully designed, with parts devoted to investigating different aspects of customers' perceptions of food products with the Nutri-Score label. Questionnaire has an introduction where respondents were introduced to the purpose of the research and five sections which were essential for the research. The questions are thoughtfully tailored to the setting of this study, drawing their construction from well-established scales. This questionnaire includes eight researcher-made questions with a five-point Likert scale, three dichotomous questions and a section of demographics. Different existing experiments were used

to develop questionnaire (Folkvord, Bergmans, & Pabian, 2021), (Aguenaou, 2021), (De Temmerman, Heeremans, Slabbinck, & Vermeir, 2021). By doing this, the tool is certain to accurately capture all aspects of consumer behavior, providing rich and meaningful data.

2.5. Respondent selection, methods and scope of the research

The study's target group is the residents of Lithuania who shop for food and come from different socioeconomic backgrounds and ages. To ensure a representative sample, an intensive effort has been made to reach out through a variety of online channels and social media platforms. Owing to a shortage of resources, convenience sampling - a non-probability method of data collection - was used in this study. The goal of the questionnaire is to gather about 200 answers from various individuals. $z=1.96$ is the 95% confidence interval.

Various statistical analysis methods were used in the practical part of this research to achieve the study's objective. Descriptive statistics were employed to summarize the characteristics of the respondents, providing an overview of key demographic variables. The validity of the scales used in the study and the normality of internal questions were checked, along with the use of descriptive statistics. To test the hypotheses of the research, statistical tests for two or more independent samples, independence test, as well as correlation and regression analysis were utilized. The significance level $\alpha = 0.05$ was chosen for this study. This data analysis process was conducted using the software IBM SPSS, ensuring accurate and reliable interpretation of the collected data.

The impact of the Nutri-Score label on Lithuanian consumers' purchase intentions is the scope of this research. The focus of the research is on food items bearing the Nutri-Score label, with a particular focus on how consumer behavior in Lithuania is impacted by this labelling system. The purpose of the study is to provide insight into customer preferences and how they make decisions about foods with nutritional labels. Although Lithuania is the main emphasis, the results can have important ramifications for comparable markets and situations.

3. DATA ANALYSIS AND RESULTS

3.1. Demographic and behavioral indicators of respondents

The age distribution of the participants in this study was skewed towards a younger demographic, with individuals under 25 years old constituting the majority at 50.2% (n = 108). This was followed by the 25 – 34 age group, representing 22.3% of the sample (n = 48). The participation progressively decreased with increasing age; those in the 35 – 44 age bracket comprised 10.7% (n = 23), while participants aged 45 – 54 accounted for 12.1% of the sample (n = 26). The least represented age group was individuals aged 55 – 64, making up only 4.7% of the participants (n = 10). This distribution indicates a predominantly younger cohort, with over 72.6% of the respondents being under 34 years of age, suggesting a potential skew in the perspectives and behaviors captured towards younger age groups.

Table 1 The age distribution of the participants

Age group	Frequency	Percent
Under 25	108	50.2%
25 – 34 y.	48	22.3%
35 – 44 y.	23	10.7%
45 – 54 y.	26	12.1%
55 – 64 y.	10	4.7%

Source: prepared by the author

The gender composition of the study participants presented a nearly balanced distribution, with females slightly outnumbering males. Specifically, females represented 51.6% of the participants (n = 111), while males accounted for 48.4% (n = 104). This close to even split in gender representation underscores the study's ability to incorporate perspectives from both female and male participants.

Table 2 The gender distribution of the participants

Gender	Frequency	Percent
Female	111	51.6%
Male	104	48.4%

Source: prepared by the author

The educational background of the study's participants was predominantly characterized by a high level of formal education. A significant majority, 59.5% (n = 128), reported having a Bachelor's degree, indicating a well-educated sample base. Individuals with a high school diploma

represented 21.4% (n = 46) of the participants, while those with a Master's degree or higher comprised 19.1% (n = 41). This distribution indicates a skew towards higher educational attainment, with approximately 78.6% of the participants having at least a Bachelor's degree.

Table 3 The educational level distribution of the participants

Educational level	Frequency	Percent
High School	46	21.4%
Bachelor's Degree	128	59.5%
Master's Degree or higher	41	19.1%

Source: prepared by the author

The distribution of average monthly salary among the participants in this study revealed a concentration in the middle-income brackets. The largest group, comprising 44.2% of participants (n = 95), reported earning between €1001 and €1500 per month. This was followed by those earning €1501 or over, who constituted 31.2% of the sample (n = 67). A smaller proportion, 17.7% (n = 38), fell into the €501 – €1000 monthly income bracket, while the lowest income group, earning under €500 per month, was represented by 7.0% of participants (n = 15). This salary distribution indicates a higher representation of participants from middle to upper-middle income brackets.

Table 4 The average monthly salary distribution of the participants

Average monthly salary	Frequency	Percent
Under €500	15	7.0%
€501 – €1000	38	17.7%
€1001 – €1500	95	44.2%
€1501 or over	67	31.2%

Source: prepared by the author

The study's data on average monthly spending on food products reveals a wide range of consumer spending habits. Nearly two of five of the participants, 37.7% (n = 81), reported spending between €201 and €300 monthly on food products. This was followed by 22.8% (n = 49) in the €301 – €400 group and 17.7% (n = 38) who spent €401 or over. A smaller proportion of the sample, 15.3% (n = 33), fell into the €101 – €200 spending category, while the lowest average monthly spending group, under €100 per month, comprised 6.5% of the participants (n = 14). The high concentration of participants in the €201 – €300 and higher average monthly spending brackets (cumulatively 78.2%) suggests that the sample may lean towards individuals with greater financial flexibility in food purchasing. This characteristic of the sample is important, as spending

habits on food might correlate with lifestyle choices, health consciousness, or socio-economic status, factors that could influence this study's outcomes.

Table 5 The average monthly spending on food products distribution of the participants

Average monthly spending on food products	Frequency	Percent
Under €100	14	6.5%
€101 – €200	33	15.3%
€201 – €300	81	37.7%
€301 – €400	49	22.8%
€401 or over	38	17.7%

Source: prepared by the author

The self-reported physical activity levels of participants in this study varied, with a notable inclination towards at least some degree of regular physical activity. The largest group consisted of lightly active individuals, who engage in light exercise or sports 1 – 3 days a week, representing 40.9% of the sample (n = 88). This was followed closely by those who categorized themselves as moderately active, participating in moderate exercise or sports 3 – 5 days a week, accounting for 36.7% (n = 79) of participants. A smaller proportion of the sample, 15.3% (n = 33), identified as sedentary, indicating little to no exercise, while those who are very active or extremely active (engaging in hard exercise or sports 6 – 7 days a week or twice a day) comprised 7.0% (n = 15). In this case the data shows a tendency towards engaging in some form of physical activity among most of the participants. The distribution of physical activity levels highlights a participant base that is generally inclined towards an active lifestyle, with over 77.6% reporting light to moderate activity levels. The lower representation of very active or extremely active individuals (7.0%) and sedentary individuals (15.3%) indicates a lesser engagement from the extremes of the physical activity spectrum.

Table 6 The overall level of physical activity distribution of the participants

Overall level of physical activity	Frequency	Percent
Sedentary (little to no exercise)	33	15.3%
Lightly active (light exercise / sports 1 – 3 days a week)	88	40.9%
Moderately active (moderate exercise / sports 3 – 5 days a week)	79	36.7%
Very active or extremely active (hard exercise / sports from 6 – 7 days a week to twice a day)	15	7.0%

Source: prepared by the author

3.2. Reliability analysis

In order to evaluate the internal consistency of a scale comprising four questions related to factors influencing the decision to buy Nutri-Score labeled food products, a reliability analysis was performed using Cronbach's Alpha.

The reliability analysis showed a Cronbach's Alpha of 0.853, indicating a high level of internal consistency among the four items in the scale. The individual item analysis revealed varying degrees of influence, with the average ratings as follows: Clear Information/Nutritional Awareness ($M = 3.33$, $SD = 1.359$), Trust in Label Accuracy ($M = 3.21$, $SD = 1.283$), Perceived Health Benefits ($M = 3.41$, $SD = 1.235$), and Influence of Peers and Social Circles ($M = 2.39$, $SD = 1.299$). Each item contributed to the overall reliability of the scale, with responses suggesting that factors like nutritional awareness, trust in label accuracy, and perceived health benefits are generally considered more influential in decision-making compared to the influence of peers and social circles. The high Cronbach's Alpha value reflects the consistency across these items in measuring the construct of factors influencing Nutri-Score label product purchases.

Table 7 Reliability analysis results of the factors influencing participants decision to buy Nutri-Score labeled food products

Question	Mean	Standard Deviation	Cronbach's Alpha
Clear Information/Nutritional Awareness: To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?	3.33	1.359	0.853
Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	3.21	1.283	
Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?	3.41	1.235	
Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	2.39	1.299	

Source: prepared by the author

3.3. Descriptive statistics

In the descriptive analysis of participant responses to ranked questions, several insights emerged regarding their attitudes and behaviors related to the Nutri-Score label. The participants' self-rated understanding of the Nutri-Score label yielded an average score of 2.85 (SD = 1.322), suggesting a moderate level of familiarity among the study population. When asked about the importance of the Nutri-Score label in making food purchasing decisions, the average rating was

2.64 (SD = 1.199), indicating that while some participants find it significant, it is not a predominant factor for all

Table 8 Descriptive statistics results of questions, based on a scale of 1-5

Question	Mean	Standard Deviation
On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	2.85	1.322
On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	2.64	1.199
On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?	2.28	1.202
On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?	3.60	1.367

Source: prepared by the author

Furthermore, the frequency with which the Nutri-Score label influences participants' food purchasing decisions was rated at an average of 2.28 (SD = 1.202), suggesting that the label's influence is occasional rather than consistent. In contrast, the likelihood of choosing a food product with a higher Nutri-Score rating was rated higher, with an average of 3.60 (SD = 1.367), indicating a relatively stronger inclination towards selecting healthier options when they are identified by the Nutri-Score.

In the assessment of recognition of the "Nutri-Score" label among the study participants, a significant majority, representing 75.3% (n = 162), indicated that they do recognize the label. Conversely, 24.7% (n = 53) of the participants reported not recognizing the Nutri-Score label. Regarding participants' beliefs about the usefulness of the Nutri-Score label in providing information about the nutritional content of food products, a substantial majority, 81.4% (n = 175), affirmed their belief in the label's usefulness. On the other hand, 18.6% (n = 40) of the participants expressed skepticism or disbelief regarding the utility of the Nutri-Score labels in conveying

nutritional information. This distribution indicates a strong overall confidence in the Nutri-Score system as a tool for understanding food nutrition among most of the participants.

Table 9 Descriptive statistics results of questions, based on categories

Question	Yes (n, %)	No (n, %)
Do you recognize the “Nutri-Score” label?	162 (75.3%)	53 (24.7%)
Do you believe Nutri-Score labels provide useful information about the nutritional content of a food product?	175 (81.4%)	40 (18.6%)
Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)?	158 (73.5%)	57 (26.5%)

Source: prepared by the author

In addressing the willingness of participants to pay a slightly higher price for food products with a higher Nutri-Score rating (indicating a healthier option), a significant proportion, 73.5% (n = 158), expressed their willingness to do so, while slightly more than quarter, 26.5% (n = 57) of the respondents indicated that they would not be inclined to pay more for such products. This result highlights a considerable level of health-conscious consumer behavior within the sample, where the majority are open to investing more in healthier food options as indicated by the Nutri-Score rating, despite the potential for increased cost.

The descriptive analysis of this study provides insightful perspectives on participant attitudes and behaviors towards the Nutri-Score labeling system. Most participants recognize the Nutri-Score label, and a substantial number believe in its usefulness for conveying nutritional information. Additionally, the analysis reveals a significant willingness among participants to pay more for healthier food options as identified by the Nutri-Score.

3.4. Normality analysis

As part of the statistical analysis, a normality test was conducted for the scale variables, which are ranked from 1 to 5. Given the sample size (n = 215 > 50), the One-Sample Kolmogorov-Smirnov test was performed to determine the distribution of the data.

The results of the One-Sample Kolmogorov-Smirnov test indicated significant deviations from normality for all the scale variables examined. The test statistics ranged from 0.165 to 0.226 with the corresponding $p < 0.001$ for all variables. This suggests that the distributions of responses on all scale questions, including ratings of understanding, importance, influence, likelihood of choosing based on Nutri-Score, and various factors influencing Nutri-Score labeled product purchases, deviates from a normal distribution.

The significant deviations from a normal distribution imply that the assumptions required for parametric tests are not met, making non-parametric alternatives the more appropriate choice for analyzing these data. Consistent with the normality analysis results, non-parametric methods were exclusively utilized for hypothesis testing in this study.

Table 10 Results of One-Sample Kolmogorov-Smirnov Test for Normality of Scale Variables

Question	Test statistic	p value
On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	0.165	< 0.001
On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	0.168	< 0.001
On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?	0.214	< 0.001
On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?	0.226	< 0.001
Clear Information/Nutritional Awareness: To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?	0.197	< 0.001
Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	0.181	< 0.001
Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?	0.222	< 0.001
Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	0.201	< 0.001

Source: prepared by the author

3.5. Results of hypothesis evaluation

This section presents the outcomes of the research hypotheses, each tested individually to ensure clarity and precision in the findings. The structure of the testing was methodically designed to address each hypothesis separately, allowing for a focused and detailed analysis. Additionally, supplementary methods were employed where necessary to strengthen the reliability and validity of the results.

H1: Understanding of Nutri-Score label positively impacts consumers' willingness to pay a slightly higher price for a food product with a higher Nutri-Score rating.

The crosstabulation analysis of consumers' understanding of the Nutri-Score label (rated from 1 to 5) against their willingness to pay a slightly higher price for a product with a higher Nutri-Score rating helped to discover a clear pattern. As the level of understanding increased, so did the willingness to pay more. Specifically, 57.1% of participants with the lowest understanding (rating 1) were willing to pay more, increasing to 88.5% among those with the highest understanding (rating 5). In addition, the Pearson Chi-Square test of independence indicated a statistically significant association between the understanding of the Nutri-Score label and the willingness to pay more for higher-rated products, since $\text{Chisq}(4) = 14.295$; $p = 0.006 < 0.05$.

Table 11 Crosstabulation and Chi-Square Test Results for H1: Understanding of Nutri-Score label positively impacts consumers' willingness to pay a slightly higher price for a food product with a higher Nutri-Score rating

On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	Rank Score	Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)?	
		Yes	No
	1	28 (57.1%)	21 (42.9%)
	2	23 (69.7%)	10 (30.3%)
	3	44 (72.1%)	17 (27.9%)
	4	40 (87.0%)	6 (13.0%)
	5	23 (88.5%)	3 (11.5%)
Chisq(4) = 14.295; p = 0.006			

Source: prepared by the author

The statistical analysis suggests a significant positive relationship between the level of understanding of the Nutri-Score label and the willingness to pay a higher price for food products with a higher Nutri-Score rating. This finding indicates that as consumers become more knowledgeable about the Nutri-Score system, they are increasingly inclined to spend more on healthier options, underscoring the importance of consumer education in promoting health-conscious purchasing behaviors, thus H1 was confirmed.

H2: Influence of Peers and Social Circles positively influence decision to buy Nutri-Score labeled food products.

Given that both variables under consideration are ranked from 1 to 5, both correlation and regression analyses were performed to test this hypothesis. The table below presents the Spearman's correlation results, with p-values on the main diagonal and correlation coefficients on the opposing diagonal.

Table 12 Spearman's Correlation Analysis Results for H2: Influence of Peers and Social Circles positively influence decision to buy Nutri-Score labeled food products

	On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?	Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?
On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?	$p < 0.001$	$\rho = 0.414$
Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	$\rho = 0.414$	$p < 0.001$

Source: prepared by the author

The Spearman's rho correlation coefficient between the frequency of Nutri-Score label influence on purchase decisions and the influence of peers and social circles was found to be $\rho = 0.414$; $p < 0.001$. This positive correlation indicates a moderate association between these factors, suggesting that as the influence of peers and social circles increases, so does the frequency of Nutri-Score label influence on purchasing decisions.

Additionally, a regression analysis was performed to further explore the relationship between the understanding Nutri-Score label and willingness to pay for higher-rated food products. Linear regression results showed, that Influence of Peers and Social Circles has an statistically significant positive impact on the decision to buy Nutri-Score labeled food products ($\beta = 0.362$; $p < 0.001$). Furthermore, R Square showed that the influence of peers and social circles

explains approximately 15.3% ($R^2 = 0.153$) of the variance in the decision to buy Nutri-Score labeled food products.

Table 13 Regression Analysis Results for H2: Influence of Peers and Social Circles positively influence decision to buy Nutri-Score labeled food products

Factor	Coefficient	Std. Error	t statistic	p value
Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	0.362	0.058	6.211	< 0.001
$R^2 = 0.153$		$F(1, 213) = 38.580; p < 0.001$		

Source: prepared by the author

The results from both correlation and regression analyses demonstrate a significant and positive relationship between the influence of peers and social circles and the decision to purchase Nutri-Score labeled food products. Thus, it can be concluded that the second hypothesis was confirmed as well as the first hypothesis.

H3: Perceived health benefits of Nutri-Score label positively correlate with trust in label accuracy.

The Spearman's rho correlation between perceived health benefits of Nutri-Score labeled products and trust in label accuracy is statistically significant, since $\rho = 0.696; p < 0.001$. In addition, the correlation coefficient value is near strong relationship boundary (the relationship considered as strong when $\rho > 0.7$). This almost strong positive correlation indicates that as the perceived health benefits of Nutri-Score labeled products increase, so does the trust in the accuracy of the label.

Table 14 Spearman's Correlation Analysis Results for H3: Perceived health benefits of Nutri-Score positively correlate with trust in label accuracy label

	Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?
Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	$p < 0.001$	$\rho = 0.696$
Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?	$\rho = 0.696$	$p < 0.001$

Source: prepared by the author

For this hypothesis, regression analysis was also performed. As could be expected, a statistically significant relationship was found between trust in label accuracy and perceived health benefits of Nutri-Score labeled products ($\beta = 0.745$; $p < 0.001$). In this case the coefficient of determination showed that perceived health benefits explains approximately 51.4% ($R^2 = 0.514$) of the variance in trust in label accuracy.

Table 15 Regression Analysis Results for H3: Perceived health benefits of Nutri-Score label positively correlate with trust in label accuracy

Factor	Coefficient	Std. Error	t statistic	p value
Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	0.362	0.058	6.211	< 0.001
$R^2 = 0.153$		$F(1, 213) = 38.580$; $p < 0.001$		

Source: prepared by the author

The results from both the correlation and regression analyses provide strong evidence supporting H3. There is a significant positive correlation and relationship between the perceived health benefits of Nutri-Score labeled products and the trust consumers place in the accuracy of these labels.

H4: Belief that Nutri-Score labels provide useful information about the nutritional content of a food product positively correlate with the importance of Nutri-Score label when making food purchasing decisions.

The crosstabulation examining the relationship between the belief in the usefulness of Nutri-Score labels and the importance of these labels in making food purchasing decisions reveals a clear trend. As belief in the usefulness of Nutri-Score labels increases, so does the importance placed on them in purchasing decisions. Notably, 100% of participants who rated the importance of the Nutri-Score label as 5 believe in its usefulness, while those rating the importance as 1 show a less unanimous belief (42.6% Yes vs. 57.4% No). In addition, the Pearson Chi-Square test yielded a high value ($\text{Chisq}(4) = 60.857$; $p < 0.001$), indicating a highly significant association between the belief in the Nutri-Score label's usefulness and its perceived importance in purchasing decisions.

Table 16 Crosstabulation and Chi-Square Test Results for H4: Belief that Nutri-Score labels provide useful information about the nutritional content of a food product positively correlate with the importance of Nutri-Score label when making food purchasing decisions

On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	Rank Score	Do you believe Nutri-Score labels provide useful information about the nutritional content of a food product?	
		Yes	No
	1	20 (42.6%)	27 (57.4%)
	2	45 (90.0%)	5 (10.0%)
	3	62 (91.2%)	6 (8.8%)
	4	32 (94.1%)	2 (5.9%)
	5	16 (100.0%)	0 (0.0%)
$\text{Chisq}(4) = 60.857$; $p < 0.001$			

Source: prepared by the author

The results of the Chi-Square test and the patterns observed in the crosstabulation strongly support H4. There is a significant positive relationship between the belief in the Nutri-Score label's utility and its importance in consumers' food purchasing decisions. This finding suggests that the perceived utility of the Nutri-Score label is one of a crucial factors influencing how consumers value this label in their decision-making process.

H5: People with higher monthly salary (1501 EUR and over) tend to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option).

Before testing H5, the data were refactorized to ensure a more focused analysis. Specifically, the three lower average salary groups (Under 1500 EUR) were merged into a single category and compared against the highest average salary group (1501 EUR and over). Thus, to check H5, the Mann-Whitney U test, suitable for comparing distributions between two independent groups, was performed.

The Mann-Whitney U test did not reveal a statistically significant difference between the two salary groups in terms of their likelihood to choose food products with higher Nutri-Score ratings, since $U = 4639.000$; $p = 0.435 > 0.05$. In addition, the mean rank for the group with an average monthly salary under 1500 EUR was 105.84, while it was 112.76 for the group earning 1501 EUR or over, which is not make a big difference.

Table 17 Mann-Whitney U test results for H5: People with higher monthly salary (1501 EUR and over) tend to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)

On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?			
Group	N	Mean Rank	Sum of Ranks
Under 1500 EUR	148	105.84	15665.00
1501 EUR or over	67	112.76	7555.00
$U = 4639.00$; $p = 0.435$			

Source: prepared by the author

This result suggests that contrary to H5, there is no clear evidence within this sample that people with higher monthly salaries are more inclined to choose healthier food options, as identified by the Nutri-Score, compared to those with lower salaries.

H6: People with higher education level tend to choose clear information/nutritional awareness of Nutri-Score labeled food products as a main factor affecting their decision to buy it.

Given that the education level includes three categories (High School, Bachelor's Degree, Master's Degree or higher), the Kruskal-Wallis test was performed to check this hypothesis.

Table 18 Kruskal-Wallis H test results for H6: People with higher education level tend to choose clear information/nutritional awareness of Nutri-Score labeled food products as a main factor affecting their decision to buy it

Clear Information/Nutritional Awareness: To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?			
Group	N	Mean Rank	Sum of Ranks
High School	46	86.17	3964.00
Bachelor's Degree	128	110.78	14180.00
Master's Degree or higher	41	123.82	5077.00
H(2) = 9.000; p = 0.011			

Source: prepared by the author

The Kruskal-Wallis test statistic is relatively high ($H(2) = 9.000$; $p = 0.011 < 0.05$), indicating a statistically significant difference across the education levels. The mean ranks for the impact of clear information/nutritional awareness on decision-making were as follows: High School (86.17), Bachelor's Degree (110.78), and Master's Degree or higher (123.82). This indicates a clear trend that supports H6.

While the Kruskal-Wallis H test and rank analysis indicate significant differences in clear information/nutritional awareness based on education levels, they do not specify which groups differ significantly. Hence, additionally a post-hoc analysis was performed for a detailed comparison between each educational category.

Table 19 Pairwise comparison results for H6: People with higher education level tend to choose clear information/nutritional awareness of Nutri-Score labeled food products as a main factor affecting their decision to buy it

Group 1	Group 2	Test statistic	Std. Error	Std. Test statistic	p value
Higher School	Bachelor's Degree	-24.603	10.434	-2.358	0.018
Higher School	Master's Degree or higher	-37.643	13.037	-2.888	0.004
Bachelor's Degree	Master's Degree or higher	-13.040	10.892	-1.197	0.231

Source: prepared by the author

In the pairwise comparison analysis following the Kruskal-Wallis test, significant differences were observed between specific education levels. A notable difference in the emphasis on clear information/nutritional awareness of Nutri-Score labels was found between individuals

with a High School education and those with a Bachelor's Degree (Std. Test statistic = -2.358; $p = 0.018 < 0.05$) or Master's Degree or higher (Std. Test statistic = -2.888; $p = 0.004 < 0.05$). However, no significant difference was observed between individuals with a Bachelor's Degree and those with a Master's Degree or higher (Std. Test statistic = -1.197; $p = 0.231 > 0.05$). Hence, it can be concluded that Kruskal-Wallis H test results confirmed H6.

H7: People with very active or higher overall level of physical activity tend to recognize “Nutri-Score” label better than others.

The Pearson Chi-Square test results indicating a statistically significant association between physical activity level and recognition of the Nutri-Score label, since $\text{Chisq}(3) = 12.987$; $p = 0.005 < 0.05$, while the crosstabulation of physical activity levels with recognition of the Nutri-Score label shows varied recognition rates. Sedentary individuals recognized the label 63.6% of the time, lightly active individuals 83.0%, moderately active individuals 67.1%, and very active or extremely active individuals recognized it 100% of the time.

Table 20 Crosstabulation and Chi-Square Test Results for H7: People with very active or higher overall level of physical activity tend to recognize “Nutri-Score” label better than others

How would you describe your overall level of physical activity?	Physical activity level	Do you recognize the “Nutri-Score” label?	
		Yes	No
	Sedentary (little to no exercise)	21 (63.6%)	12 (36.4%)
	Lightly active (light exercise/sports 1-3 days a week)	73 (83.0%)	15 (17.0%)
	Moderately active (moderate exercise/sports 3-5 days a week)	53 (67.1%)	26 (32.9%)
	Very active or extremely active (hard exercise/sports from 6-7 days a week to twice a day)	15 (100.0%)	0 (0.0%)
Chisq(3) = 12.987; $p = 0.005$			

Source: prepared by the author

The results from the Chi-Square test suggest that there is a significant association between an individual's level of physical activity and their recognition of the Nutri-Score label. Particularly, individuals with higher levels of physical activity (especially those categorized as very active or extremely active) tend to have a higher recognition rate of the Nutri-Score label compared to less active individuals. This finding supports hypothesis, hence we can conclude that H7 was confirmed.

H8: Participants over 55 years old do not recognize Nutri-Score label.

In this case, the Pearson Chi-Square test result showed no statistically significant difference in Nutri-Score label recognition across different age groups ($\chi^2(4) = 1.912$; $p = 0.752 > 0.05$). The crosstabulation comparing age groups with recognition of the Nutri-Score label, supports Chi-Square results and showed that the group aged 55 – 64 had the highest recognition rate at 90.0%. In contrast, the recognition rates for other age groups were slightly lower: 76.9% for under 25, 70.8% for 25 – 34, 73.9% for 35 – 44, and 73.1% for 45 – 54.

Table 21 Crosstabulation and Chi-Square Test Results for H8: Participants over 55 years old do not recognize Nutri-Score label

	Age group	Do you recognize the “Nutri-Score” label?	
		Yes	No
Age	Under 25 y.	83 (76.9%)	25 (23.1%)
	25 – 34 y.	34 (70.8%)	14 (29.2%)
	35 – 44 y.	17 (73.9%)	6 (26.1%)
	45 – 54 y.	19 (73.1%)	7 (26.9%)
	55 – 65 y.	9 (90.0%)	1 (10.0%)
	$\chi^2(4) = 1.912$; $p = 0.752$		

Source: prepared by the author

Contrary to H8, the results indicate that participants over 55 years old do not show a lower recognition of the Nutri-Score label. In fact, they exhibited the highest recognition rate among all age groups. The lack of a significant difference across age groups in the Chi-Square test further suggests that age does not play a decisive role in the recognition of the Nutri-Score label in this sample. These findings contradict the initial assumption of H8, hence this hypothesis cannot be confirmed.

H9: People who tend to spend more than 300 EUR on food products monthly are willing to pay a slightly higher price for a food product with a higher Nutri-Score rating.

To test Hypothesis H9, the categories for average monthly spending on food products were consolidated into two groups for a clearer analysis: those spending under 300 EUR and those spending over 300 EUR per month. This categorization aimed to specifically assess whether spending more than 300 EUR monthly on food products influences the willingness to pay a slightly higher price for food products with higher Nutri-Score ratings.

The crosstabulation results indicate that 72.7% of participants who spend under 300 EUR and 74.7% of those who spend over 300 EUR per month are willing to pay a higher price for food products with a higher Nutri-Score rating. The Pearson Chi-Square test results supports these

findings ($\text{Chisq}(1) = 0.112$; $p = 0.737 > 0.05$), indicating that there is no statistically significant difference in willingness to pay more for higher Nutri-Score rated products between the two spending categories.

Table 22 Crosstabulation and Chi-Square Test Results for H9: People who tend to spend more than 300 EUR on food products monthly are willing to pay a slightly higher price for a food product with a higher Nutri-Score rating

Average monthly spending on food products	Spending group	Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)?	
		Yes	No
	Under 300 EUR	93 (72.7%)	35 (27.3%)
	Over 300 EUR	65 (74.7%)	22 (25.3%)
$\text{Chisq}(1) = 0.112$; $p = 0.737$			

Source: prepared by the author

The findings from the crosstabulation and Chi-Square test do not support H9. There is no significant difference in the willingness to pay a higher price for food products with a higher Nutri-Score rating between individuals who spend under 300 EUR and those who spend over 300 EUR monthly on food products.

Table 23 Summary of hypotheses testing results

Hypothesis	Test / Methods	p value	Conclusion
H1: Understanding of Nutri-Score label positively impacts consumers' willingness to pay a slightly higher price for a food product with a higher Nutri-Score rating	Chi-Square	0.006	Confirmed
H2: Influence of Peers and Social Circles positively influence decision to buy Nutri-Score labeled food products	Spearman's correlation / Regression	< 0.001	Confirmed
H3: Perceived health benefits of Nutri-Score label positively correlate with trust in label accuracy	Spearman's correlation / Regression	< 0.001	Confirmed
H4: Belief that Nutri-Score labels provide useful information about the nutritional content of a food product positively correlate with the importance of Nutri-Score label when making food purchasing decisions.	Chi-Square	< 0.001	Confirmed
H5: People with higher monthly salary (1501 EUR and over) tend to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)	Mann-Whitney U test	0.435	Not Confirmed
H6: People with higher education level tend to choose clear information/nutritional awareness of Nutri-Score labeled food products as a main factor affecting their decision to buy it	Kruskal-Wallis H test	0.011	Confirmed
H7: People with “very active” or higher overall level of physical activity tend to recognize “Nutri-Score” label better than others	Chi-Square	0.005	Confirmed
H8: Participants over 55 years old do not recognize Nutri-Score label	Chi-Square	0.752	Not Confirmed
H9: People who tend to spend more than 300 EUR on food products monthly are willing to pay a slightly higher price for a food product with a higher Nutri-Score rating	Chi-Square	0.737	Not Confirmed

Source: prepared by the author

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

1. The literature review highlights that food labeling is relevant to consumers and producers, although there is no consensus on one/correct labeling content and presentation. The Nutri-Score label, grounded in scientific facts, aims to provide a rapid and clear summary of nutritional content, encouraging better dietary choices, it educates customers on the nutritional worth of food items and promotes the use of better options.
2. Studies on the Nutri-Score label yield varied outcomes on its effectiveness in influencing consumers. Despite mixed findings, individuals express a strong preference for healthier options. Numerous studies have shown that Nutri-Score positively influences consumer understanding, preference, and perceived healthiness of products. By empowering consumers with easily comprehensible information, food labels like Nutri-Score could contribute to promoting healthier diets and improving public health.
3. Demographic insights from the research that was conducted point to a possible bias in perspectives and behaviors towards younger, more educated persons, emphasizing the significance of taking these demographic characteristics into account when interpreting the study's findings.
4. The Nutri-Score label was recognized by a considerable majority of participants, indicating a high degree of knowledge within the study population. Furthermore, major part of participants were confident in the Nutri-Score label's usefulness in giving nutritional information about food products. These high recognition and belief levels indicate a positive reception of the Nutri-Score system among consumers in Lithuania. Moreover, findings indicate that, while there is a moderate understanding and occasional influence of the label, consumers are more likely to choose healthier products based on the Nutri-Score.
5. The study's findings provided insight into the complex aspects influencing customers' intentions to purchase Nutri-Score-labeled food products in Lithuania. To begin, a favorable association was discovered between consumers' understanding of the Nutri-Score label and their willingness to pay a premium for healthier products, highlighting the critical importance of consumer education in altering purchase behaviors. Social effects, particularly those from peers and social circles, revealed as important determinants influencing Nutri-Score uptake, emphasizing the relevance of social dynamics in shaping consumer decisions in the Lithuanian environment. Furthermore, the study found a substantial correlation between perceived health advantages and trust in the Nutri-Score label, emphasizing the importance of health-oriented messaging to increase consumer trust

in label accuracy. The positive link between the perceived usefulness of Nutri-Score labels and their importance in purchasing decisions emphasizes the importance of perceived utility in impacting consumer decision-making processes even further. Surprisingly, the study contradicted the hypothesis that higher salaries directly translate to healthier food choices, implying that other factors influence food preferences in Lithuania in addition to money. Education was proven as a crucial effect, with those with higher education levels prioritizing clear information and nutritional awareness, offering policymakers and educators with insights. Furthermore, the study discovered a significant correlation between higher levels of physical activity and improved Nutri-Score label recognition, implying a link between health-conscious behaviour and label awareness. Unexpectedly, participants over 55 years old exhibited the highest Nutri-Score label recognition rate, challenging the assumed age-related limitations in label recognition. Lastly, the lack of a significant difference in willingness to pay based on monthly spending implies that consumer choices are not solely driven by financial capacity, presenting a nuanced perspective on the relationship between spending habits and food preferences in Lithuania.

6. The Nutri-Score label influences consumers' intention to buy food products in Lithuania through a combination of factors such as education, social influences, perceived health benefits and utility perception. The impact extends beyond demographic factors, challenging assumptions about age and income-related influences. The findings provide valuable insights for policymakers, educators, and businesses aiming to understand and leverage the Nutri-Score label in the Lithuanian consumer landscape.

Recommendations:

1. To improve consumer awareness of the Nutri-Score label, implement targeted teaching programmes in schools, community centers and online platforms. This effort intends to increase comprehension by giving clear information on label interpretation and making healthier food choices, directly addressing the beneficial association between label comprehension and customers' willingness to pay more for healthier options.
2. Create social impact initiatives to promote the use of Nutri-Score labelled products among community groups, social organizations, and peer networks. Encourage positive peer impact on food habits while cultivating a community-driven approach to improving overall nutritional choices. This proposal is consistent with the study's emphasis on the influence of peers and social circles on Nutri-Score choices, and it provides a practical and social option for influencing consumer behaviour.

3. To highlight the perceived health benefits of Nutri-Score labelled products, develop health-oriented communications initiatives driven by health professionals, nutritional advocates, and marketing teams. This strategy attempts to increase consumer trust in label accuracy while also generating a good image of the Nutri-Score system and encouraging healthier food choices. This proposal, which is consistent with the study's findings about the relationship between perceived health benefits and trust, focuses on effective communication tactics for improved consumer perception.
4. Encourage businesses, food manufacturers, and marketing departments to prominently display Nutri-Score labelling on packaging and promotional materials. This strategy capitalizes on customer recognition and favorably influences purchasing decisions at the point of sale, while also giving businesses with tangible measures to exploit the Nutri-Score label in their marketing activities.
5. Creating a structured framework for continued monitoring and research is critical for tracking the Nutri-Score label's developing influence in Lithuania. This includes developing a systematic approach for conducting periodic assessments of consumer attitudes, purchasing patterns, and the success of public health programmes. Policymakers, corporations, and educators can use this framework to remain on top of changes in consumer behaviors and preferences connected to the Nutri-Score. This continual monitoring will aid in the detection of new trends and the assessment of the label's long-term impact on dietary choices. Furthermore, it serves as a foundation for adaptive strategies and informed policy decisions, ensuring that initiatives stay effective and responsive to the changing nature of consumer responses. This recommendation underscores the importance of staying proactive in understanding and addressing the evolving landscape of nutritional labeling in Lithuania.
6. Examining future changes in consumer behaviour might aid in understanding the long-term impact of Nutri-Score labelling. Such research may investigate how awareness and knowledge of the Nutri-Score label vary over time, as well as if long-term exposure affects dietary choices. Researchers can provide significant information for policymakers and businesses looking to conduct long-term interventions in the changing environment of food choices by examining the label's long-term consequences.

REFERENCES

- (HCSP), H. C. (2015). *Avis relatif à l'information sur la qualité nutritionnelle des produits alimentaires*. HCSP. <https://www.hcsp.fr/explore.cgi/avisrapportsdomaine?clefr=519>
- A., G.-A., R., L. J., & Long, M. W. (2016). Understanding front-of-package sugary cereal label claims and their associations with nutrition knowledge, diet quality, and intentions to improve diet. *Public Health Nutrition*, 19(18), 3324-3333.
- Afshin, A., Sur, P., & Fay, K. (2019). Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 393, 1958-1972. [https://doi.org/10.1016/S0140-6736\(19\)30041-8](https://doi.org/10.1016/S0140-6736(19)30041-8)
- Agency, S. N. (2022, March 17). *The Keyhole*. Retrieved from livsmedelsverket: <https://www.livsmedelsverket.se/en/food-and-content/labelling/nyckelhalet>
- Agriculture, F. M. (2020 March). *Press realese of BMEL no 48*. BMEL.
- Aguenau, H. E. (2021). Comparison of appropriateness of Nutri-Score and other front-of-pack nutrition labels across a group of Moroccan consumers: awareness, understanding and food choices. *Arch Public Health* 79, 71. <https://doi.org/10.1186/s13690-021-00595-3>
- Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Hum Behav & Emerg Tech*; 2, 314–324. <http://doi.org/10.1002/hbe2.195>
- ANSES. (2019). *Agence Nationale de Sécurité Sanitaire, Environnement et Santé au Travail*. ANSES. <https://www.anses.fr/fr>
- Authority, N. F., & Health, N. D. (2008). *Anbefaling av en sunnhetsmerkeordning [Recommendation for a health mark scheme]*. Regjeringen.no.
- Ayaz, A., Dedebyraktar, D., Inan-Eroglu, E., Besler, H., & Buyuktuncer, Z. (2021). How does nutrition education contribute to the consumers' use and attitudes towards food labels? *Nutrition and Food Science*, Vol. 51 No. 3, 517-528. <https://doi.org/10.1108/NFS-05-2020-0174>
- Birgit Gassler, C. K. (2023). Toward a differentiated understanding of the effect of Nutri-Score nutrition labeling on healthier food choices. *Agribusiness: an International Journal: Virtual Issue of Recent Studies on Consumer Choice Experiments Volume39, Issue1*, 28-50. <https://doi.org/10.1002/agr.21762>
- Browne, J., Coffey, B., Cook, K., Meiklejohn, S., & Palermo, C. (2019). A guide to policy analysis as a research method. *Health Promotion International*, 1032-1044. <https://doi.org/10.1093/heapro/day052>

C, A., P, S., & M, R. (2008). Validating a nutrient profile model. *Public Health Nutrition*, 11(4), 371–378. <https://doi.org/10.1017/S1368980007000377>

C, J., & S, H. (2017). Development of a new front-of-pack nutrition label in France: the five-Colour Nutri-Score. *Public Health Panorama*, 712–725. <https://iris.who.int/handle/10665/325207>

Care, D. o. (2016). *Guide to creating a front of pack (FoP) nutrition label for pre-packed products sold through retail outlets*. gov.uk. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/566251/FoP_Nutrition_labelling_UK_guidance.pdf

Carreño, I. (2015). Chile's black STOP sign for foods high in fat, salt or sugar. *European Journal of Risk Regulation*, 6, 622-628. <http://doi.org/10.1017/S1867299X0000516X>

Co-operation, N. (2021). “*New guidelines make the Keyhole even greener*.” <https://www.norden.org/en/news/new-guidelines-make-keyhole-even-greener>

Commission, E. (2020). *European Union’s Farm to Fork Strategy – for a fair, healthy and environmentally-friendly food system*. Brussels: European Commission. https://food.ec.europa.eu/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf

Cowburn, G., & Stockley, L. (2005). Consumer understanding and use of nutrition labelling: A systematic review. *Public Health Nutrition*, 8(1),21-28. <https://doi.org/10.1079/phn2005666>

David M. Cutler, A. L.-M. (2006). *EDUCATION AND HEALTH: EVALUATING THEORIES AND EVIDENCE*. Cambridge, MA: NATIONAL BUREAU OF ECONOMIC RESEARCH. <http://doi.org/10.3386/w12352>

De Temmerman, J., Heeremans, E., Slabbinck, H., & Vermeir, I. (2021). The impact of the Nutri-Score nutrition label on perceived healthiness and purchase intentions. *Appetite*, Vol. 157, 104-995. <https://doi.org/10.1016/j.appet.2020.104995>

Dean T Jamison, J. G. (2006). *Disease Control Priorities in Developing Countries* . Washington (DC): The International Bank for Reconstruction and Development / The World Bank. <http://hdl.handle.net/10986/7242>

Ducrot, P. J.-J. (2022). Nutri-Score: Awareness, Perception and Self-Reported Impact on Food Choices among French Adolescents. *Nutrients*, 14(15), 3119. <https://doi.org/10.3390/nu14153119>

Edelenyi, F. d., Egnell, M., Galan, P., Druesne-Pecollo, N., Hercberg, S., & Julia, C. (2019). Ability of the Nutri-Score front-of-pack nutrition label to discriminate the nutritional quality of foods in the German food market and consistency with nutritional

recommendations. *Archives of Public Health*, 77 (1), 28. <https://doi.org/10.1186/s13690-019-0357-x>

Egnell, M., Galan, P., Fialon, M., Touvier, M., Péneau, S., Kesse-Guyot, E., . . . Julia, C. (2021). The impact of the Nutri-Score front-of-pack nutrition label on purchasing intentions of unprocessed and processed foods: post-hoc analyses from three randomized controlled trials. *Int J Behav Nutr Phys Act* 18, 39. <https://doi.org/10.1186/s12966-021-01108-9>

Egnell, M., Talati, Z., Hercberg, S., Pettigrew, S., & Julia, C. (2018). Objective understanding of front-of-package nutrition labels: An international comparative experimental study across 12 countries. *Nutrients*, 10 (10), 1542. <https://doi.org/10.3390/nu10101542>

European Parliament 1169, E. R. (2011). *Regulation (EU) No 1169/2011 of the European Parliament and the Council of 25 October 2011 on the provision of food information to consumers*. Brussels: European Parliament and the Council. <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:304:0018:0063:en:PDF>

Fardet, A. (2015). A shift toward a new holistic paradigm will help to preserve and better process grain products' food structure for improving their health effects. *Food Funct*, 6, 363-382. <https://doi.org/10.1039/c4fo00477a>

Federation, F. a. (2019, January 21). *Food labelling*. Retrieved from foodlabel: http://www.foodlabel.org.uk/corporate_pubs/Food_Drink_Labelling_toolkit.pdf

Fernqvist, F., & Ekelund, L. (2014). Credence and the effect on consumer liking of food – A review. *Food Quality and Preference*, 32, 340-353. <https://doi.org/10.1016/j.foodqual.2013.10.005>

Fischer, L., Sutherland, L., Kaley, L., Fox, T., Hasler, C., & al, J. N. (2011). Development and implementation of the guiding stars nutrition guidance program. *American Journal of Health Promotion*, 26, e55-e63. <https://doi.org/10.4278/ajhp.100709-QUAL-238>

Folkvord, F., Bergmans, N., & Pabian, S. (2021). The effect of the nutri-score label on consumer's attitudes, taste perception and purchase intention: An experimental pilot study. *Food Quality and Preference*, 94. <https://doi.org/10.1016/j.foodqual.2021.104303>

Foundation, C. I. (2020). *Choices programme*. Retrieved from Choices programme: <https://www.choicesprogramme.org>

France, S. p. (2019). *Usage Regulation for the Nutri-Score logo, version 18*. Appendix 1 Specifica- tions booklet: classification of the food product using the 5-colour nutritional scale. https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/usage_regulation_en_01102019.pdf

Goetzke, B. I., & Spiller, A. (2014). Health-improving lifestyles of organic and functional food consumers. *British Food Journal Vol. 116, No. 3*, 510-526.
<https://doi.org/10.1108/BFJ-03-2012-0073>

Gokani, N. (2022). Front-of-pack nutritional labelling: a tussle between EU food law and national measures. *European Law Review, Vol. 47 No. 2*, 153-174.
https://repository.essex.ac.uk/31919/9/Gokani_2022_47_ELRev_Issue_2_Offprint.pdf

Gomez, P., Werle, C., & Corneille, O. (2017). The pitfall of nutrition facts label fluency: Easier-to-process nutrition information enhances purchase intentions for unhealthy food products. *Marketing Letters, 28 (1)*, 15-27. <https://doi.org/10.1007/s11002-015-9397-3>

Grunert, K. G., & Wills, J. M. (2007). A review of European research on consumer response to nutrition information on food labels. *Journal of Public Health volume 15*, 385–399. <https://doi.org/10.1007/s10389-007-0101-9>

Hau, R. C., & Lange, K. W. (2023). Can the 5-colour nutrition label “Nutri-Score” improve the health value of food? *Journal of Future Foods Volume 3, Issue 4*, 306-311.
<https://doi.org/10.1016/j.jfutfo.2023.03.002>

Health, A. G. (2016, November 21). *Food regulation*. Retrieved from foodregulation: <http://foodregulation.gov.au/internet/fr/publishing.nsf/Content/front-of-pack-labelling-1>

Hercberg, S., Touvier, M., & Salas-Salvado, J. (2021). The Nutri-Score nutrition label. *International Journal for Vitamin and Nutrition Research (2021)*, 92, 147-157.
<https://doi.org/10.1024/0300-9831/a000722>

Huang, L., & Lu, J. (2016). The impact of package color and the nutrition content labels on the perception of food healthiness and purchase intention. *Journal of food products marketing, 22 (2)*, 191-218. <https://doi.org/10.1080/10454446.2014.1000434>

Institut, M. M.-R. (2019). *report in German on the description and evaluation of selected 'front-of-pack' nutrition labelling models (Beschreibung und Bewertung ausgewählter 'Front-of- Pack'-Nährwertkennzeichnungsmodelle)*. Max-Rubner Institut.
https://www.bmel.de/SharedDocs/Downloads/DE/_Ernaehrung/Lebensmittel-Kennzeichnung/MRI-finaler-Bericht-Naehrwertkennzeichnung.pdf?__blob=publicationFile&v=2

Jackey, B. A., Cotugna, N., & Orsega-Smith, E. (2017). Food Label Knowledge, Usage and Attitudes of Older Adults. *Journal of Nutrition in Gerontology and Geriatrics, 36:1*, 31-47. <https://doi.org/10.1080/21551197.2017.1280868>

Jacobs, D., & Tapsell, L. (2007). Food, not nutrients, is the fundamental unit in nutrition. *Nutr. Rev., 65(10)*, 439-450. <https://doi.org/10.1111/j.1753-4887.2007.tb00269.x>

Jones, A. (2020). The effects of front-of-package food labels on consumer behavior and product reformulation. *Annual Review of Nutrition*, 40, 211-231.

Julia, C., Hercberg, S., & Organization, W. H. (2017). Development of a new front-of-pack nutrition label in France: The five-colour Nutri-Score. *Public Health Panorama*, 3 (04), 712-725. <https://apps.who.int/iris/handle/10665/325207>

Julia, C., Hercberg, S., & Touvier, M. (2020). Nutri-Score: Evidence of the effectiveness of the French front-of-pack nutrition label. *Ernahrungs Umschau*, 67(3), 36-42. https://www.ernaehrungs-umschau.de/fileadmin/Ernaehrungs-Umschau/pdfs/pdf_2017/12_17/EU12_2017_WuF_Nutriscore_englisch.pdf

Julia, C., Kesse-Guyot, E., Touvier, M., Mejean, C., Fezeu, L., & Hercberg, S. (2014). Application of the British Food Standards Agency nutrient profiling system in a French food composition database. *British Journal of Nutrition*, 112(10), 1699-1705. <http://doi.org/10.1017/S0007114514002761>

Katz, D. L., Njike, V. Y., Rhee, L. Q., Reingold, A., & Ayoob, K. T. (2010). Performance characteristics of NuVal and the overall nutrition quality index (ONQI). *American Journal of Clinical Nutrition*, 91(4), 1102S-1108S. <https://doi.org/10.3945/ajcn.2010.28450E>

Kelly, B., & Jewell, J. (2018). *What is the evidence on the policy specifications, development processes and effectiveness of existing front-of-pack food labeling policies in the WHO European Region?* Copenhagen: Health Evidence Network Synthesis Report No. 61, World Health Organization Regional Office for Europe. <https://www.ncbi.nlm.nih.gov/books/NBK534354/>

Kousar, R., Sadaf, T., Makhdam, M., & Ijaz, A. (2017). Determinants of household's education and nutrition spending: A gender-based empirical analysis. *Humanomics*, Vol. 33 No. 4, 470-483. <https://doi.org/10.1108/H-06-2016-0050>

Krause, C., Sommerhalder, K., Beer-Borst, S., & Abel, T. (2018). Just a subtle difference? Findings from a systematic review on definitions of nutrition literacy and food literacy. *Health Promotion International*, Vol. 33 No. 3, 378-389. <https://doi.org/10.1093/heapro/daw084>

Larrivee, S., Abou Chakra, C. N., & Bélanger-Gravel, A. (2019). The impact of the Nutri-Score front-of-pack label on food purchases: A field experiment. *Food Policy*, 84, 184-194.

Loureiro, M. L., Gracia, A., & Rodolfo M. Nayga, J. (2006). Do consumers value nutritional labels? . *European Review of Agricultural Economics*, Volume 33, Issue 2, 249–268. <https://doi.org/10.1093/erae/jbl005>

Lupton, J., Balentine, D., Black, R., Hildwine, R., Ivens, B., & al, E. K. (2010). The Smart choices front-of-package nutrition labeling program: Rationale and development of the nutrition criteria. *American Journal of Clinical Nutrition*, 91(4), 1078S-1089S.

<https://doi.org/10.3945/ajcn.2010.28450B>

M, R., P, S., L, S., & A, B. (2005). Nutrient Profiles. *London: Food Standards Agency*.

https://www.researchgate.net/publication/266447771_Nutrient_profiles_Development_of_Final_Model_Final_Report

M, R., Scarborough, & L. T. (2009). Defining “healthy” and “unhealthy” food and drinks for TV advertising to children. *The UK Ofcom Nutrient Profiling Model*.

Meijer, G. W., Detzel, P., Grunert, K. G., Robert, M.-C., & Stancu, V. (2021). Towards effective labelling of foods. *An international perspective on safety and nutrition, Trends in Food Science & Technology, Volume 118, Part A*, 45-56.

<https://doi.org/10.1016/j.tifs.2021.09.003>

Meisterernst, A., & Evans, L. (2020). Union Law Basis and Official Controls of the Nutri-Score®. *European Food and Feed Law Review*, 15(3). *JSTOR*, 202–211.

Michael S. Dohan, J. T. (2013). *Perceived Usefulness and Behavioral Intention to Use Consumer-Oriented Web-Based Health Tools: A Meta- Analysis*. Chicago, Illinois: Proceedings of the Nineteenth Americas Conference on Information Systems.

<https://core.ac.uk/download/pdf/301360294.pdf>

Ministry for Economic Development (2021). *Nutrinform battery*. Retrieved from Nutrinform battery: <https://www.nutrinformbattery.it/en/home>

Morrison, O. (2020). Food label fight: Italy’s NutrInform ‘confusing and counter-intuitive’, claim consumers groups. *Food Navigator Europe*.

<https://www.foodnavigator.com/Article/2020/01/31/Food-label-fight-Italy-s-NutrInform-confusing-and-counter-intuitive-claim-consumers-groups>

Mozaffarian, D. (2016). Dietary and policy priorities for cardiovascular disease, diabetes, and obesity: a comprehensive review. *Circulation*, 133(2), 187-225.

<https://doi.org/10.1161/CIRCULATIONAHA.115.018585>

Mozaffarian, D., & Ludwig, D. (2010). Dietary guidelines in the 21st century—a time for food. *JAMA*, 304(6), 681-682. <https://doi.org/10.1001/jama.2010.1116>

Nations, F. a. (1991). *GENERAL STANDARD FOR THE LABELLING OF AND CLAIMS FOR PREPACKAGED FOODS FOR SPECIAL DIETARY USES*. United Nations.

<https://www.fao.org/fao-who-codexalimentarius/sh->

proxy/es/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B1-1985%252FCXS_001e.pdf

Nutrirechner. (2022, January 2). *Nutri Score Calculator*. Retrieved from nutrirechner: <https://nutrirechner.xyz/en/>

Organization, W. H. (2018). *World Health Organization*. Retrieved from who.int: https://www.who.int/nmh/countries/2018/ltu_en.pdf

PARLIAMENT, T. E. (2011, November 22). *REGULATION (EU) No 1169/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL*. Retrieved from Eur-LEX: <https://eur-lex.europa.eu>

Peonides, M., Knoll, V., Gerstner, N., Heiss, R., Frischhut, M., & Gokani, N. (2022). Food labeling in the European Union: a review of existing approaches. *International Journal of Health Governance Vol. 27 No. 4*, 460-468. <https://doi.org/10.1108/IJHG-07-2022-0072>

Pollan, M. (2010). *In defense of food: an eater's manifesto*. Penguin.

Program, T. N. (2019, January 21). *Nuval*. Retrieved from NuVal: <https://www.nuval.com>

Rauber, F., Campagnolo, P., Hoffman, D., & al., e. (2015). Consumption of ultra-processed food products and its effects on children's lipid profiles: a longitudinal study. *Nutr. Metab. Cardiovasc. Dis.*, 25, 116-122. <https://doi.org/10.1016/j.numecd.2014.08.001>

Reyes, M., Garmendia, M. L., Olivares, S., Aqueveque, C., Zacarías, I., & Corvalán, C. (2019). Development of the Chilean front-of-package food warning label. *BMC Public Health* 19, 906. <https://doi.org/10.1186/s12889-019-7118-1>

Rijksoverheid. (2019). *Nutri-Score wordt na aanpassing het voedselkeuzelogo voor Nederland (Press realese)*. rijksoverheid.nl.

Safety, D.-G. f. (2020). *REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL regarding the use of additional forms of expression and presentation of the nutrition declaration*. Brussels: European Commission. <https://eur-lex.europa.eu/legal-content/GA/ALL/?uri=CELEX:52020DC0207>

Sanjari, S. S., Jahn, S., & Boztug, Y. (2017). Dual-process theory and consumer response to front-of-package nutrition label formats. *Nutrition Reviews, Volume 75, Issue 11*, 871–882. <https://doi.org/10.1093/nutrit/nux043>

Shepherd, R., Sparks, P., & Guthrie, C. (1995). *The application of the theory of planned behaviour to consumer food choice*. *ACR European*. Advances.

Siyi Shangguan MD, M. (2019). A Meta-Analysis of Food Labeling Effects on Consumer Diet Behaviors and Industry Practices. *American Journal of Preventive Medicine*, 300-314. <https://doi.org/10.1016/j.amepre.2018.09.024>

South, A. (2011). rworldmap: a new R package for mapping global data. *The R Journal*, Vol. 3 No. 1, 35-43. <https://journal.r-project.org/archive/2011/RJ-2011-006/RJ-2011-006.pdf>

Stars, G. (2019, January 21). *Guiding Stars*. Retrieved from Guiding Stars: <https://guidingstars.ca/about>

Talati, Z., Egnell, M., Hercberg, S., Julia, C., & Pettigrew, S. (2019). Consumers' perceptions of five front-of-package nutrition labels: An experimental study across 12 countries. *Nutrients*, 11 (8), 1934. <https://doi.org/10.3390/nu11081934>

Temple, N. J. (2020). Front-of-package food labels: A narrative review. *Appetite*, Volume 144, 104485. <https://doi.org/10.1016/j.appet.2019.104485>

Temple, N. J., & Fraser, J. (2014). Food labels: A critical assessment. *Elsevier* , 257-260. <https://doi.org/10.1016/j.nut.2013.06.012>

W. Widyastuti, S. H. (2020). Revisiting the online shopper's behaviour in Indonesia: The role of trust and perceived benefit. *International Journal of Industrial Engineering and Management Volume 11 / No 4* , 226 - 236. <http://doi.org/10.24867/IJIEEM-2020-4-267>

White, M., Aguirre, E., Dickerson, E., Finegood, D., Holmes, C., Sacks, G., & Smith, R. (2020). What role should the commercial food system play in promoting health through better diet? *British Medical Journal*, Vol. 368. <https://doi.org/10.1136/bmj.m545>

"NUTRI-SCORE" ŽENKLO POVEIKIS VARTOTOJŲ KETINIMUI PIRKTI MAISTO PRODUKTUS LIETUVOJE

MARIUS STASIŪNAITIS

Baigiamasis bakalauro darbas

Globali rinkodara

Vilniaus universiteto Ekonomikos ir verslo administravimo fakultetas

Darbo vadovas – lektorius Rokas Bekeris

Vilnius, 2023

Santrauka

47 puslapiai, 8 figūros, 23 lentelės, 86 literatūros šaltiniai.

Ižangoje pabrėžiamas didėjantis pasaulinis susirūpinimas dėl mitybos problemų, pabrėžiant veiksmingų iniciatyvų, skirtų šviesti žmones sveikesnio maisto pasirinkimo link, būtinybę. „Nutri-Score“ etiketė pasirodo kaip įmanomas atsakymas, nes joje aiškiai pavaizduota maistinė vertė. Išsakyta tyrimo problema: Kokią įtaką Nutri-Score etiketė turi vartotojų ketinimams pirkti maisto produktus Lietuvoje? Tyrimu siekiama pateikti reikšmingų įžvalgų, nagrinėjant vartotojų požiūrį, suvokimą ir pirkimo elgseną Lietuvoje, susijusią su „Nutri-Score“ ženklu. Bakalauro darbą sudaro keturios pagrindinės dalys: mokslinės literatūros apžvalga, tyrimo metodai, tyrimo rezultatai, išvados ir rekomendacijos.

Literatūros apžvalgoje nagrinėjami keli maisto produktų ženklinimo aspektai, Europos Sąjungos maisto produktų ženklinimo praktika ir „Nutri-Score“ etiketė. Išsamiai aprašomas etiketės tikslas, kūrimas ir maistinės vertės apskaičiavimas. Taip pat vertinami esami „Nutri-Score“ etiketės įtakos ketinimams pirkti tyrimai, pabrėžiant atitinkamų tyrimų poreikį Lietuvos rinkoje.

Peržiūrėjus literatūrą, Lietuvoje buvo atlikta mokslinė apklausa, siekiant nustatyti veiksnius, įtakančius pirkėjų ketinimą pirkti Nutri-Score ženklintus maisto produktus. Remiantis išvadamis, „Nutri-Score“ ženklas įtakoja žmonių ketinimus pirkti maisto prekes Lietuvoje dėl įvairių veiksnių, įskaitant išsilavinimą, socialinę įtaką, suvokiamą naudą sveikatai ir panaudojimo suvokimą.

Išvadose ir rekomendacijose apibendrinami ir nustatomi svarbiausi tyrimo rezultatai bei pateikiami pasiūlymai verslui, organizacijoms ir būsimiems tyrimams.

IMPACT OF NUTRI-SCORE LABEL ON CONSUMERS' INTENTION TO BUY FOOD PRODUCTS IN LITHUANIA

MARIUS STASIŪNAITIS

Bachelor thesis

Global Marketing

Vilnius University, Faculty of Economics and Business Administration

Supervisor – lecturer Rokas Bekeris

Vilnius, 2023

Summary

47 pages, 8 figures, 23 tables, 86 references.

The growing global concern about diet-related problems is highlighted in the introduction, emphasizing the necessity for effective initiatives to educate people towards healthier food choices. The Nutri-Score label emerges as a feasible answer because of its transparent representation of nutritional content. The research problem is clearly stated: What is the impact of the Nutri-Score label on consumers' intention to buy food products in Lithuania? The study seeks to provide significant insights by examining consumer attitudes, perceptions, and purchase behavior in Lithuania in relation to the Nutri-Score label. A bachelor's thesis has four key parts: study of scientific literature, research methods, research results, and conclusions and recommendations.

The literature review examines several aspects of food labels, European Union food labelling practices, and the Nutri-Score label. It elaborates on the label's purpose, creation, and nutritional value computation. Existing research on the Nutri-Score label's impact on purchase intention is also evaluated, emphasizing the need for dedicated research in the Lithuanian setting.

Following the review of the literature, a research survey was undertaken in Lithuania to determine the factors influencing customers' willingness to purchase Nutri-Score-labeled food products. According to the findings, the Nutri-Score label influences people's intentions to purchase food goods in Lithuania through a combination of factors including education, social influences, perceived health advantages, and utility perception.

Conclusions and recommendations summarize and identify the most important results from the study and make suggestions for businesses, organizations and future research.

ANNEXES

Annex 1. Research questionnaire

Tyrimas: Nutri-Score ženklo poveikis vartotojų ketinimams pirkti maisto produktus Lietuvoje Research on the impact of Nutri-Score label on consumers' intention to buy food products in Lithuania

Sveiki, esu Marius Stasiūnaitis, Vilniaus universiteto paskutinio kurso studentas, studijuojantis globalią rinkodarą. Dabar atlieku tyrimą, kaip vartotojų ketinimus pirkti maisto prekes veikia Nutri-Score etiketė. Anketos užpildymas man būtų labai naudingas. Šiai apklausai užpildyti užtruksite tik penkias minutes, o jūsų sugaištas laikas yra labai vertinamas!

Įgyta informacija bus laikoma privačia ir naudojama tik bakalauro darbui.
Ačiū už skirtą laiką.

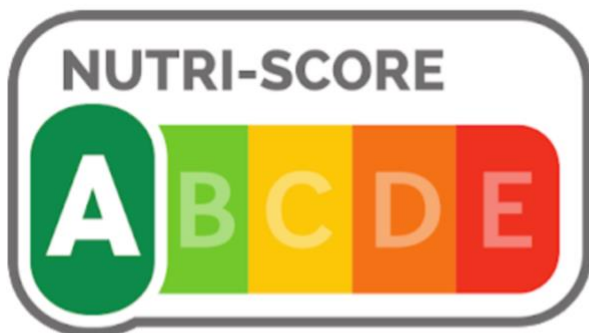
Greetings, I am Marius Stasiūnaitis, a final-year student at Vilnius University studying global marketing for my bachelor's degree. I'm now conducting research on how consumers' intentions to purchase food goods are affected by the Nutri-Score label. Completing the survey would be very helpful to me. It should only take you five minutes to complete this survey, and your time is greatly appreciated!
The acquired information will be kept private and utilized exclusively for the bachelor's thesis.
I appreciate your time.

1 skyrius: Nutri-Score ženklo supratimas

Section 1: Awareness and Understanding of Nutri-Score Label

Ar atpažįstate etiketę „Nutri-Score“? *

Do you recognize the "Nutri-Score" label?



☐ Yes

☐ No

Kaip įvertintumėte savo supratimą apie Nutri-Score ženklimą nuo 1 iki 5? *

On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?

	1	2	3	4	5	
Very low	☐	☐	☐	☐	☐	Very high

2 skyrius: „Nutri-Score“ etiketės svarba

Section 2: Perceived Importance of Nutri-Score Label

Ar manote, kad „Nutri-Score“ etiketės suteikia naudingos informacijos apie maisto produkto maistinę sudėtį? *

Do you believe Nutri-Score labels provide useful information about the nutritional content of a food product?

- ☐ Yes
- ☐ No

Skalėje nuo 1 iki 5, kiek jums svarbi Nutri-Score etiketė priimant sprendimus dėl maisto pirkimo? *

On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?

	1	2	3	4	5	
Not important at all	☐	☐	☐	☐	☐	Extremely important

3 skyrius: Įtaka sprendimams pirkti

Section 3: Impact on Purchasing Decisions

Skalėje nuo 1 iki 5, kaip dažnai Nutri-Score etiketė įtakoja jūsų sprendimą pirkti maisto produktą? *

On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?

	1	2	3	4	5	
Very rarely	☐	☐	☐	☐	☐	Very often

Kiek tikėtina, kad skalėje nuo 1 iki 5 pasirinksite maisto produktą su aukštesniu Nutri-Score įvertinimu (sveikesnis pasirinkimas), o ne žemesniu Nutri-Score įvertinimu (mažiau sveikas pasirinkimas)? *

On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?

	1	2	3	4	5	
Very unlikely	☐	☐	☐	☐	☐	Very likely

Ar mokėtumėte šiek tiek daugiau už maisto produktą, turintį aukštesnį Nutri-Score įvertinimą (sveikesnis pasirinkimas), palyginti su žemesniu Nutri-Score įvertinimu (mažiau sveikas pasirinkimas)? *

Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)?

☐ Yes

☐ No

4 skyrius: Veiksniai, įtakoiantys sprendimą pirkti Nutri Score pažymėtus maisto produktus

Section 4: Factors Affecting Decision to Buy Nutri-Score Labeled Food Products

Įvertinkite veiksnius, turinčius įtakos jūsų apsisprendimui pirkti „Nutri-Score“ ženklintus maisto produktus, 1–5 balais. *

(1 visai neįtakingas, 5 labai įtakingas)

Please rate the factors that influence your decision to buy Nutri-Score labeled food products on a scale of 1-5.

(1 being not influential at all, 5 being extremely influential)

	1	2	3	4	5
Aiški informacija: kiek Nutri-Score etiketė leidžia geriau suprasti produkto maistinę sudėtį? Clear Information/Nutritional Awareness: To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?	☐	☐	☐	☐	☐

Pasitikėjimas etiketės
tikslumu: kiek
pasitikite „Nutri-Score“
etiketėje pateiktos
informacijos tikslumu?

Trust in Label

Accuracy: How much
trust do you have in
the accuracy of the
information provided
by the Nutri-Score
label?

☐☐☐☐☐

Suvokiama nauda
sveikatai: kiek, jūsų
nuomone, „Nutri-
Score“ ženklinti
produktai prisideda
prie sveikesnio
gyvenimo būdo?

Perceived Health

Benefits: How much
do you believe Nutri-
Score labeled products
contribute to a
healthier lifestyle?

☐☐☐☐☐

Socialinio rato įtaka:
kiek draugų ar šeimos
narių rekomendacijos
įtakoja „Nutri-Score“
ženklintų produktų
pasirinkimą?

Influence of Peers and
Social Circles: To what
extent do
recommendations or
preferences of friends
or family influence
your choice of Nutri-
Score labeled
products?

☐☐☐☐☐

5 skyrius: Demografiniai rodikliai
Section 5: Demographics

Amžius (pasirinkite tinkamą variantą): *

Age (choose the right option):

- ☐ Under 18
- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65 or over

Lytis (pasirinkite tinkamą variantą): *

Gender (choose the right option):

- ☐ Vyras/Male
- ☐ Moteris/Female
- ☐ Non-binary/third gender
- ☐ Nenorėčiau sakyti/Prefer not to say

Išsilavinimo lygis (pasirinkite tinkamą variantą): *

Education Level (choose the right option):

- ☐ Vidurinė mokykla/High School
- ☐ Bakalauro laipsnis/Bachelor's Degree
- ☐ Magistro laipsnis arba aukštesnis/Master's Degree or higher

Vidutinis mėnesinis atlyginimas (pasirinkite tinkamą variantą): *

Average monthly salary (choose the right option):

- ☐ Under 500€
- ☐ 501-1000€
- ☐ 1001-1500€
- ☐ 1501€ or over

Vidutinės mėnesio išlaidos maisto produktams (pasirinkite tinkamą variantą): *

Average monthly spending on food products (choose the right option):

- ☐ Under 100€
- ☐ 101-200€
- ☐ 201-300€
- ☐ 301-400€
- ☐ 401€ or over

Kaip apibūdintumėte savo bendrą fizinio aktyvumo lygį? *

How would you describe your overall level of physical activity?

- ☐ Neaktyvus (mažai arba visai nesportuoja)/Sedentary (little to no exercise)
- ☐ Lengvai aktyvus (lengva mankšta/sportas 1-3 dienas per savaitę)/Lightly active (light exercise/sports 1-3 days a week)
- ☐ Vidutiniškai aktyvus (vidutiniškai mankštinatės / sportuojate 3–5 dienas per savaitę)/Moderately active (moderate exercise/sports 3-5 days a week)
- ☐ Labai aktyvus (sunkūs pratimai / sportas 6-7 dienas per savaitę)/Very active (hard exercise/sports 6-7 days a week)
- ☐ Itin aktyvus (labai sunkus pratimas/sportas ir fizinis darbas arba treniruotės du kartus per dieną)/Extremely active (very hard exercise/sports & physical job or training twice a day)

Dėkoju, kad dalyvaujate šioje apklausoje.

Thank you for participating in this survey.

Jūsų indėlis yra labai vertingas tyrimui. Jei turite daugiau pastabų ar klausimų, nedvejodami susisiekitė.

Your input is highly valuable for research. If you have any further comments or questions, please feel free to contact me.

Annex 2. Results of analysis of demographic and behavioral indicators of respondents

Age (choose the right option):

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 25	108	50.2	50.2	50.2
	25-34	48	22.3	22.3	72.6
	35-44	23	10.7	10.7	83.3
	45-54	26	12.1	12.1	95.3
	55-64	10	4.7	4.7	100.0
	Total	215	100.0	100.0	

Gender (choose the right option):

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	111	51.6	51.6	51.6
	Male	104	48.4	48.4	100.0
	Total	215	100.0	100.0	

Education Level (choose the right option):

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High School	46	21.4	21.4	21.4
	Bachelor's Degree	128	59.5	59.5	80.9
	Master's Degree or higher	41	19.1	19.1	100.0
	Total	215	100.0	100.0	

Average monthly salary (choose the right option):

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under €500	15	7.0	7.0	7.0
	€501-€1000	38	17.7	17.7	24.7
	€1001-€1500	95	44.2	44.2	68.8
	€1501 or over	67	31.2	31.2	100.0
	Total	215	100.0	100.0	

Average monthly spending on food products (choose the right option):

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under €100	14	6.5	6.5	6.5
	€101-€200	33	15.3	15.3	21.9
	€201-€300	81	37.7	37.7	59.5
	€301-€400	49	22.8	22.8	82.3
	€401 or over	38	17.7	17.7	100.0
	Total	215	100.0	100.0	

How would you describe your overall level of physical activity?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sedentary (little to no exercise)	33	15.3	15.3	15.3
	Lightly active (light exercise/sports 1-3 days a week)	88	40.9	40.9	56.3
	Moderately active (moderate exercise/sports 3-5 days a week)	79	36.7	36.7	93.0
	Very active or extremely active (hard exercise/sports from 6-7 days a week to twice a day)	15	7.0	7.0	100.0
	Total	215	100.0	100.0	

Annex 3. Results of reliability analysis

Reliability Statistics

Cronbach's Alpha	N of Items
.853	4

Item Statistics

	Mean	Std. Deviation	N
Clear Information/Nutritional Awareness: To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?	3.33	1.359	215
Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	3.21	1.283	215
Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?	3.41	1.235	215
Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	2.39	1.299	215

Annex 4. Results of descriptive statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	215	1	5	2.85	1.322
On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	215	1	5	2.64	1.199
On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?	215	1	5	2.28	1.202
On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?	215	1	5	3.60	1.367
Valid N (listwise)	215				

Do you recognize the “Nutri-Score” label?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	162	75.3	75.3	75.3
	No	53	24.7	24.7	100.0
	Total	215	100.0	100.0	

Do you believe Nutri-Score labels provide useful information about the nutritional content of a food product?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	175	81.4	81.4	81.4
	No	40	18.6	18.6	100.0
	Total	215	100.0	100.0	

Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	158	73.5	73.5	73.5
	No	57	26.5	26.5	100.0
	Total	215	100.0	100.0	

Annex 5. Results of normality analysis

One-Sample Kolmogorov-Smirnov Test

		On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?	On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?
N		215	215	215	215
Normal Parameters ^{a,b}	Mean	2.85	2.64	2.28	3.60
	Std. Deviation	1.322	1.199	1.202	1.367
Most Extreme Differences	Absolute	.165	.168	.214	.226
	Positive	.147	.154	.214	.152
	Negative	-.165	-.168	-.144	-.226
Test Statistic		.165	.168	.214	.226
Asymp. Sig. (2-tailed)		.000 ^c	.000 ^c	.000 ^c	.000 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

One-Sample Kolmogorov-Smirnov Test

		Clear Information/Nutri- tional Awareness: To what extent does the Nutri- Score label make you more aware of the nutritional content of a product?	Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?	Influence of Peers and Social Circles: To what extent do recommendation s or preferences of friends or family influence your choice of Nutri-Score labeled products?
N		215	215	215	215
Normal Parameters ^{a,b}	Mean	3.33	3.21	3.41	2.39
	Std. Deviation	1.359	1.283	1.235	1.299
Most Extreme Differences	Absolute	.197	.181	.222	.201
	Positive	.114	.126	.116	.201
	Negative	-.197	-.181	-.222	-.143
Test Statistic		.197	.181	.222	.201
Asymp. Sig. (2-tailed)		.000 ^c	.000 ^c	.000 ^c	.000 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Annex 6. Results of hypothesis testing

			Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)?		Total
			Yes	No	
On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	1	Count	28	21	49
		% within On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	57.1%	42.9%	100.0%
	2	Count	23	10	33
		% within On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	69.7%	30.3%	100.0%
	3	Count	44	17	61
		% within On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	72.1%	27.9%	100.0%
	4	Count	40	6	46
		% within On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	87.0%	13.0%	100.0%
	5	Count	23	3	26
		% within On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	88.5%	11.5%	100.0%
Total		Count	158	57	215
		% within On a scale of 1-5, how would you rate your understanding of the Nutri-Score label?	73.5%	26.5%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	14.295 ^a	4	.006
Likelihood Ratio	14.868	4	.005
Linear-by-Linear Association	13.343	1	.000
N of Valid Cases	215		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.89.

Correlations

		On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?		Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?
Spearman's rho	On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?	Correlation Coefficient	1.000	.414**
		Sig. (2-tailed)	.	.000
		N	215	215
	Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	Correlation Coefficient	.414**	1.000
		Sig. (2-tailed)	.000	.
		N	215	215

** . Correlation is significant at the 0.01 level (2-tailed).

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.414	.158		8.925	.000		
	Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?	.362	.058	.392	6.211	.000	1.000	1.000

a. Dependent Variable: On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.425	1	47.425	38.580	.000 ^b
	Residual	261.831	213	1.229		
	Total	309.256	214			

a. Dependent Variable: On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?

b. Predictors: (Constant),

Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.392 ^a	.153	.149	1.109	1.851

a. Predictors: (Constant),

Influence of Peers and Social Circles: To what extent do recommendations or preferences of friends or family influence your choice of Nutri-Score labeled products?

b. Dependent Variable: On a scale of 1-5, how often does Nutri-Score label influence your decision to buy a food product?

Correlations

			Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?
Spearman's rho	Trust in Label Accuracy:	Correlation Coefficient	1.000	.696**
	How much trust do you have in the accuracy of the information provided by the Nutri-Score label?	Sig. (2-tailed)	.	.000
		N	215	215
	Perceived Health Benefits:	Correlation Coefficient	.696**	1.000
	How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?	Sig. (2-tailed)	.000	.
		N	215	215

** . Correlation is significant at the 0.01 level (2-tailed).

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.671	.180		3.724	.000		
	Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?	.745	.050	.717	15.007	.000	1.000	1.000

a. Dependent Variable:

Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	180.982	1	180.982	225.201	.000 ^b
	Residual	171.176	213	.804		
	Total	352.158	214			

a. Dependent Variable:

Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?

b. Predictors: (Constant),

Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.717 ^a	.514	.512	.896	2.110

a. Predictors: (Constant),

Perceived Health Benefits: How much do you believe Nutri-Score labeled products contribute to a healthier lifestyle?

b. Dependent Variable:

Trust in Label Accuracy: How much trust do you have in the accuracy of the information provided by the Nutri-Score label?

			Do you believe Nutri-Score labels provide useful information about the nutritional content of a food product?		
			Yes	No	Total
On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	1	Count	20	27	47
		% within On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	42.6%	57.4%	100.0%
	2	Count	45	5	50
		% within On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	90.0%	10.0%	100.0%
	3	Count	62	6	68
		% within On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	91.2%	8.8%	100.0%
	4	Count	32	2	34
		% within On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	94.1%	5.9%	100.0%
	5	Count	16	0	16
		% within On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	100.0%	0.0%	100.0%
Total	Count	175	40	215	
	% within On a scale of 1-5, how important is Nutri-Score label to you when making food purchasing decisions?	81.4%	18.6%	100.0%	

Chi-Square Tests

	Value	df	Asymptotic Significance (2- sided)
Pearson Chi-Square	60.857 ^a	4	.000
Likelihood Ratio	54.171	4	.000
Linear-by-Linear Association	38.562	1	.000
N of Valid Cases	215		

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 2.98.

Ranks

	Average Monthly Salary	N	Mean Rank	Sum of Ranks
On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?	Under €1500	148	105.84	15665.00
	€1501 or over	67	112.76	7555.00
	Total	215		

Test Statistics^a

On a scale of 1-5, how likely are you to choose a food product with a higher Nutri-Score rating (healthier option) over a lower Nutri-Score rating (less healthy option)?

Mann-Whitney U	4639.000
Wilcoxon W	15665.000
Z	-.781
Asymp. Sig. (2-tailed)	.435

a. Grouping Variable: Average Monthly Salary

Ranks

	Education Level (choose the right option):	N	Mean Rank
Clear Information/Nutritional Awareness: To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?	High School	46	86.17
	Bachelor's Degree	128	110.78
	Master's Degree or higher	41	123.82
	Total	215	

Test Statistics^{a,b}

Clear Information/Nutritional Awareness: To what extent does the Nutri-Score label make you more aware of the nutritional content of a product?

Kruskal-Wallis H	9.000
df	2
Asymp. Sig.	.011

a. Kruskal Wallis Test

b. Grouping Variable: Education Level (choose the right option):

Pairwise Comparisons of Education Level (choose the right option):

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
High School-Bachelor's Degree	-24.603	10.434	-2.358	.018	.055
High School-Master's Degree or higher	-37.643	13.037	-2.888	.004	.012
Bachelor's Degree-Master's Degree or higher	-13.040	10.892	-1.197	.231	.694

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.

Asymptotic significances (2-sided tests) are displayed. The significance level is .05.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

			Do you recognize the "Nutri-Score" label?		Total
			Yes	No	
How would you describe your overall level of physical activity?	Sedentary (little to no exercise)	Count	21	12	33
		% within How would you describe your overall level of physical activity?	63.6%	36.4%	100.0%
	Lightly active (light exercise/sports 1-3 days a week)	Count	73	15	88
		% within How would you describe your overall level of physical activity?	83.0%	17.0%	100.0%
	Moderately active (moderate exercise/sports 3-5 days a week)	Count	53	26	79
		% within How would you describe your overall level of physical activity?	67.1%	32.9%	100.0%
	Very active or extremely active (hard exercise/sports from 6-7 days a week to twice a day)	Count	15	0	15
		% within How would you describe your overall level of physical activity?	100.0%	0.0%	100.0%
	Total	Count	162	53	215
		% within How would you describe your overall level of physical activity?	75.3%	24.7%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.987 ^a	3	.005
Likelihood Ratio	16.417	3	.001
Linear-by-Linear Association	.828	1	.363
N of Valid Cases	215		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 3.70.

			Do you recognize the “Nutri-Score” label?		
			Yes	No	Total
Age (choose the right option):	Under 25	Count	83	25	108
		% within Age (choose the right option):	76.9%	23.1%	100.0%
	25-34	Count	34	14	48
		% within Age (choose the right option):	70.8%	29.2%	100.0%
	35-44	Count	17	6	23
		% within Age (choose the right option):	73.9%	26.1%	100.0%
	45-54	Count	19	7	26
		% within Age (choose the right option):	73.1%	26.9%	100.0%
	55-64	Count	9	1	10
		% within Age (choose the right option):	90.0%	10.0%	100.0%
Total	Count	162	53	215	
	% within Age (choose the right option):	75.3%	24.7%	100.0%	

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.912 ^a	4	.752
Likelihood Ratio	2.130	4	.712
Linear-by-Linear Association	.026	1	.871
N of Valid Cases	215		

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 2.47.

			Would you be willing to pay a slightly higher price for a food product with a higher Nutri-Score rating (healthier option) compared to a lower Nutri-Score rating (less healthy option)?		
			Yes	No	Total
Average monthly spending on food products of 2 categories	Under €300	Count	93	35	128
		% within Average monthly spending on food products of 2 categories	72.7%	27.3%	100.0%
	Over €300	Count	65	22	87
		% within Average monthly spending on food products of 2 categories	74.7%	25.3%	100.0%
Total	Count		158	57	215
	% within Average monthly spending on food products of 2 categories		73.5%	26.5%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.112 ^a	1	.737		
Continuity Correction ^b	.032	1	.859		
Likelihood Ratio	.113	1	.737		
Fisher's Exact Test				.756	.431
Linear-by-Linear Association	.112	1	.738		
N of Valid Cases	215				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.07.

b. Computed only for a 2x2 table