Joanna Szwacka-Mokrzycka
Baiba Rivza
Marzena Lemanowicz
Evija Uljanova

A study on consumer behaviour in the food market Eastern European countries case

Joanna Szwacka-Mokrzycka

Baiba Rivza

Marzena Lemanowicz

Evija Uljanova

A study on consumer behaviour in the food market Eastern European countries case

Warsaw University of Life Sciences Press

Warsaw 2021

Reviewers: PhD Elina Konstantinova, prof.
PhD Maria Parlińska, prof.

Cover design: Violetta Kaska

ISBN 978-83-8237-047-8

Warsaw University of Life Sciences Press
Nowoursynowska 161, 02-787 Warsaw, Poland
phone: (+48 22) 593 55 20,
e-mail: wydawnictwo@sggw.edu.pl

Print: Libra-Print, Legionów Av. 114B, 18-400 Łomża

Table of Contents

Introduction

The study has both theoretical and empirical character. Its aim is to present crucial issues concerning the consumer behaviour patterns in Eastern European countries in changing global market. The study concerns many aspects and includes basic concepts related to the consumer behaviour and its determinants, contemporary consumer trends in food consumption, changes in food consumption, as well as the level of satisfaction of nutritional needs in Poland in the first and second decade of 21th century. As well as the study concerns aspects connected with trends in consumer behaviour change in chosen Eastern European countries: Latvia and Lithuania.

The monograph consists of the four chapters. The first chapter deals with the subject of consumer behaviour and contemporary trends in the food market. It contains a wide overview of the literature related to the subject of consideration. In particular, focuses on consumer behaviour in economic theory as well as the determinants of these behaviours and trends in food consumption. The second chapter, titled: "Changes in food consumption and the level of satisfaction of nutritional needs" consists of two parts: "The economic background in Eastern European countries" and "The level of satisfaction of nutritional needs in Poland in 2003–2019". In this chapter the research interests focused mainly on identifying directions of changes in the behaviour patterns of food consumers in the first and second decade of the 21st century. There was applied an interdisciplinary approach to the study of consumption which resulted from the need to not only seek a common denominator in the interpretation of the mechanism of consumption, but also to develop tools adequate to this study area. The interdisciplinary approach to food consumption created sound grounds for formulating paradigms of its development. Also methodological and empirical approach to the estimating the level of satisfaction of nutritional needs in Poland in 2003–2019 was presented. The third chapter has empirical character and presents the results of research conducted among Polish consumers. The purpose of these studies was to get to know purchasing behaviour of Polish consumers on the food market and to identify the factors determining this behaviour.

The last chapter, titled: "Trends in Consumer Behaviour Change in the Domestic Food Market: the Causes and Consequences – Latvia and Lithuania case" includes a theoretical and empirical changes in consumer behaviour regarding food and habits, consumption and its place in the system of human values, prospects for maintaining the diversity of the national food

market in the conditions of climate change, the European Green Deal or policy trends in the European Union regarding home-produced food.

In this monograph a wide range of information and extensive methodology were used, because of many attributes touched here. The complexity and multidimensionality of the subject matters presented in the monograph necessitated the application of a highly diversified and all-encompassing methodology based on a broad scope of information.

The book is based on primary and secondary data, gathered a wide range of information. It relies on literary review presented basic definitional approaches of the main concepts. The empirical part of the book based on secondary data, relies on the data report from the EU-SILC survey of 2020, data published by Eurostat, Polish Central Statistical Office, Central Statistical Bureau of Latvia and others. The empirical part of the book based on primary data, relies on the results of consumer research conducted in Poland, Latvia and Lithuania. The diagnosis in the area of consumption was based on the results of econometric. Methods of econometric analysis were used in order to research a rate of transformations in the food consumption structure. The period 2003–2019 was selected to research. Polish Central Statistical Office (GUS) studies concerning household budgets conducted in the years 2003–2019 served as the source of information for carrying out the econometric and panel analysis. The research carried out indicates that nowadays models of panel regression, based on panel data obtained from GUS seem to have ever broader application in consumption-related studies.

The research presented in the fourth chapter was supported by the Latvia National Research Programme "Latvian Heritage and Future Challenges for the Sustainability of the State", project "Challenges for the Latvian State and Society and the Solutions in International Context (INTERFRAME-LV)," VPP-IZM-2018/1-0005 .

The book has been written first of all for students of economic and management majors, as well as for managers dealing with the analysis of consumer behaviour operating both on domestic and foreign food markets.

1. Theoretical aspects of consumer behaviour in the food market

1.1. The essence of consumer behaviour

Various changes constantly taking place in the environment have a significant impact on changes in consumer attitudes and behaviour both on the market and in other social spheres. Consumers keep taking action under the influence of a variety of factors. Some are loyal to a given brand, others are more or less consciously choosing products that appeal to their beliefs, yet others are ready to pay more without a specific reason like fashion, opinions etc. It is not clear exactly what induces people to engage in certain buying and consumption behaviour (Zych 2008). According to Kaufman (1995), consumer behaviour includes any human behaviour taking place at home, in a shop or even on the street: anywhere where people think of buying, buy or use purchased products. Consumer behaviour researchers representing various scientific disciplines deal with various aspects of these behaviours, from the decision-making process, through consumer perception, the impact of various factors on purchase decisions, or finally consumer reactions to a given product. In recent years, the concept of sustainable consumption has been of great importance, which is based on: planning, know-how, ecology, ethics and local awareness. Dąbrowska and co-authors (Dąbrowska et.al. 2015) identified in their work the attitudes of consumers towards sustainable consumption.

To get consumer behaviour right, we need to clarify the terms "consumer" and "consumption" first. Historically consumption has evolved and changed its meaning quite significantly. Apart from the consumption and use of goods, the ancient meaning of the term *consumere* included disposal or different disposal methods. Until the 14th century, there was no specific term for providing people with goods to meet their needs (Zalega 2007). Aldridge (2006) claims that the word "consume" stems from the 14th century, when it meant: to wear down, destroy, waste, squander, waste, with a clear indication of pejorative meaning**.** In economics, consumption is most often defined as an act intended to meet different needs or a process of using goods and services to meet human needs. This approach gets visible both in the narrow and broad sense of consumption. The narrow approach depicts consumption as the use of goods and services to meet human needs, where the importance of income, the acquisition of goods on the market and their use in the household are particularly emphasized. However, the broad sense is nothing other than the acts of meeting human needs resulting in concrete effects of consumption, understood as consumption functions (Zalega 2007). We can consider

consumption in various aspects and from many points of view. Each of the scientific disciplines interested in the issue of consumption will, for its own use, modify this definition and expose its aspects that are important to it. Bywalec (2010) comprehensively discussed the concept of consumption in various economic theories. Interesting considerations on consumption processes, changes in consumption under the influence of changing consumer market behaviours, megatrends, economic, social and marketing conditions are presented by Dąbrowska with co-authors (Dąbrowska et al. 2017).

The term "consumer" appears at the beginning of the 16th century, but its meaning is also not in line with its contemporary understanding and is strongly negative. Only since the mid-19th century has the meaning of the word "consumer" been neutralized and evolved toward an economic term**.** At present, a consumer is a buyer purchasing goods for his or her use (Sobol 1995, p. 589). Adam (1989, p. 136) further emphasizes that a consumer is a person who does not resell purchased goods and services to anyone. Kieżel (2004, p. 17) states that a consumer is an individual who experiences and satisfies consumption needs, through goods and services purchased on the market, produced in his/her own household or received as a social benefit. Smyczek and Sowa (2005, p.28) additionally explain that a consumer "meets his or her consumption needs and does it according to his or her own preferences, likings and traditions". Article 22 of the Polish Civil Code (Ustawa z dnia 23 kwietnia 1964 r.) defines a consumer as "a natural person who carries out a legal action with the trader not directly connected with his or her business or profession". This definition is dominated by the legal approach. Despite this variety in definitions, it is important to remember that the consumer is primarily a human being. This mere fact means that "consumer" is not a simple term, but a psychologically complex concept. A human being is a collection of experiences with his or her beliefs, knowledge and emotions. As Zimbardo, Johnson and MacCann (2017) claim, a human being is going through the so-called life cycle which with various experiences shaping him or her. These needs and experiences vary throughout this cycle. All these elements affect human decisions and behaviour, including market-related ones.

Consumer behaviour science is a young scientific discipline that, due to its interdisciplinary nature, provides a broad spectrum of analysis opportunities. Depending on the research scope and purpose, the concept of consumer behaviour may take on different meanings. In economics, consumer behaviour is primarily linked to the consumption process understood as a process of meeting human needs. The needs are met through the use of various tangible goods and services. How a given need will be met makes it necessary to make a choice and, consequently, decide how to finance the purchase of goods. An individual wishing to

satisfy his or her needs will undertake various activities, depending on both external factors coming from the environment and the internal human condition. In this case, we can say that individual's response to emerging stimuli is mainly related to (Światowy 2006):

- the specific needs establishing the order of consumer goals and aspirations,
- the size and structure of past and future consumption,
- the acquisition of material resources for consumption.

Due to the diversity of consumer needs that emerge to a different degree with various consumers and the accompanying conditions, the consumer's behaviour is mostly very individual. However, if we adopt specific behavioural criteria, relatively homogeneous groups of consumer behaviour could be defined. However, this does not depreciate the fact that each individual decides to purchase goods and services in a specific way, following his or her individual preference scale and real purchasing power.

Any company wishing to attract customers and succeed seeks to understand the consumer's behaviour on the market. A consumer is an object of interest to the market economy and is sometimes referred to as the "king of the economic system" (Rudnicki 2012, p. 8). Understanding consumer behaviour is a starting point for gaining consumer's favour and increasing market presence.

Definitions of consumer behaviour vary across the subject literature. For example, Altkorn and Kramer (1998, p. 278) present consumer behaviour as a set of reactions that involve making decisions in the process of meeting needs under certain environmental conditions. These behaviours are made of activities stimulated by a sense of need. Consumer behaviour is therefore based on the purchase of products to meet their needs, to hold and use them. According to Engel et al. (1993, p. 4), consumer behaviour is thus defined as the total of activities related to the acquisition, use and disposal of goods and services, together with the decisions preceding and conditioning these activities. Hansen (1972, p. 15) defines consumer behaviour as "the total of consumer actions and perceptions in preparation for product selection, making choice and consumption". Fabiunke et al. (1976, p. 32) claim that "consumer behaviour results from the individual perception of needs and covers all objectively and subjectively determined, rational and emotional, conscious and unconscious actions in preparation for decision-making on the consumer goods market and during consumption". Table 1 presents selected definitions of consumer behaviour by other authors.

Table 1. Selected definitions of consumer behaviour

Authors	Definition
M. Pohorille	Consumer behaviour is how they prioritize their needs, in which they choose the goods and services to satisfy these needs, and in which they use the goods on their own.
L. G. Schiffman and L.L. Kanuk (1995)	Consumer behaviour consists of actions related to the search, purchase, use and evaluation of the goods and services that exhibit the ability to satisfy needs.
J.C. Mowen	Consumer behaviour focuses on subjective decision-making about the process of acquisition of goods and services, acquisition of all kinds of experiences and ideas, and how they consume and dispose of the goods and services.
E. Kieżel	Consumer behaviour is a coherent whole of a variety of different types of activities, actions and conducts that are directly related to making different choices in the process of meeting consumer needs in a specific social, cultural and economic context.
G. Antonides and F. van Raaij	Consumer behaviour is an action covering both mental and physical activities, together with their motives and causes, in individuals and small groups, highly correlated with product information acquisition, buying, using and disposing of products.
J. Szczepański	Consumer behaviour consists in experiencing the needs, assessing and prioritizing them, i.e. establishing a subjective hierarchy of needs, choosing means of meeting the needs considered the most important.

Source: Own study based on: (Rudnicki 2004, Rosa and Perenc 2011, Zalega 2012).

From the above-presented definitions, it follows that consumer behaviour is a cyclical process, consisting of a variety of activities consisting in raising need awareness, acquiring, consuming and disposing of tangible and intangible assets. There is no single model of the decision-making process through which the consumer passes. Many factors are influencing its course. These are factors related to the consumer's environment: the market, the social environment, consumer's mental and material status, knowledge, culture, the conditions under which the decision needs to be taken, as well as to the nature of the product and related activities such as offer diversity, promotion, product characteristics and type (Maciejewski 2010, Michalski 2017). Despite there being so many variables, we succeeded in developing a single scheme that a consumer usually follows when shopping (Figure 1). The decision-making process always starts with recognizing the need, realizing that something is needed. Then, depending on the type of decision and the current state of knowledge, the process of gathering information starts and takes as long as needed. Finally, when the consumer has a satisfactory understanding

of the characteristics of the product and his or her needs, he or she establishes criteria which the good or service must meet. At the subsequent stage, the consumer evaluates the product offers. Optimization procedure model can be used here, in which goods (or services) are assessed against all criteria, or a simplified, where the scope of the assessment is limited, usually to one characteristic only. The process culminates in the decision to buy. At this point, the consumer decides whether or not to choose any of the positively assessed products, postpone or resign from the purchase. When a consumer consumes a product bought or is in the process of consumption, he or she mostly experiences "after-purchase sensations": either cognitive dissonance or satisfaction. They may be the determinants for subsequent purchases of (Maciejewski 2010, Michalski 2017).

Figure 1 shows the stages of consumer decision-making.

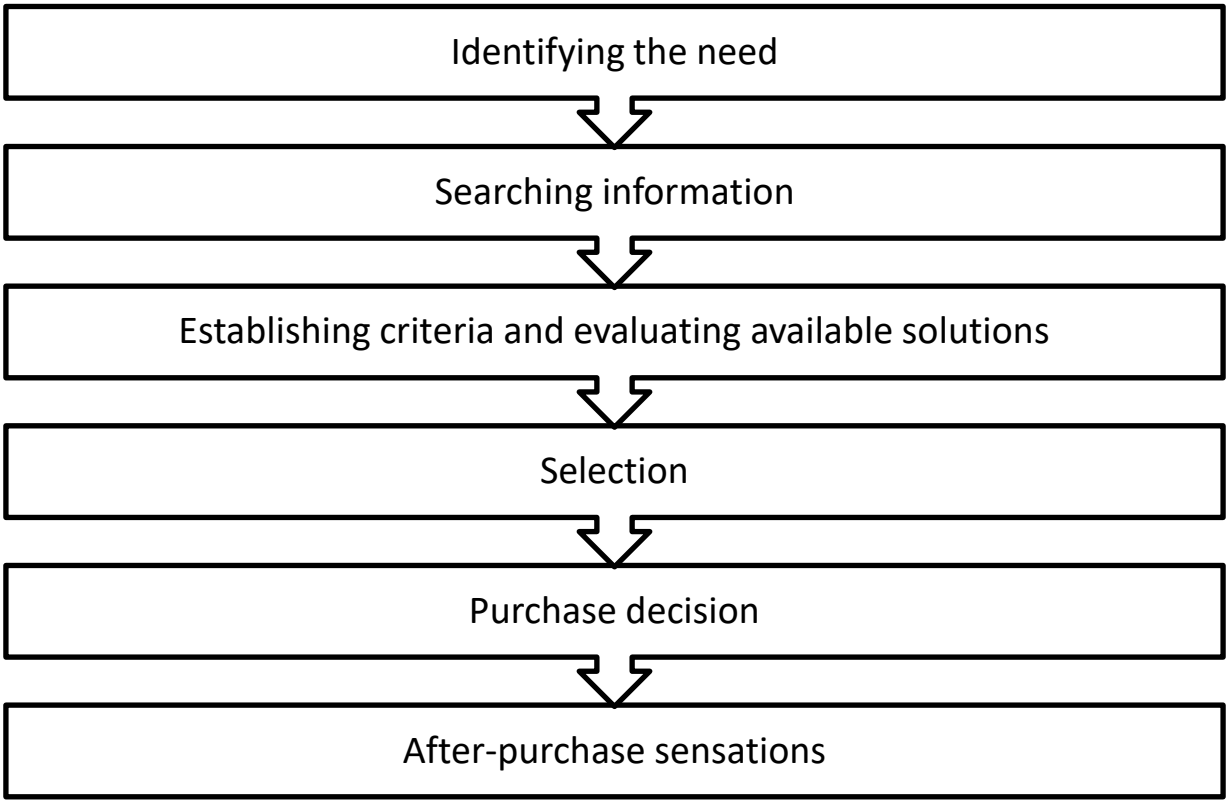

Fig.1. The phase of the consumer's decision-making process

Source: Own study based on: (Maciejewski 2010).

1.2. Consumer behaviour in economic theory

Microeconomic theories count among the earliest concepts on consumer behaviour. These theories originate from the 19th-century usability concepts and most often relate to aggregated

behaviour, which means that they preserve a broader group of microeconomic entities. They are based on the assumption that the consumption unit (household, consumer) seeks to maximize the utility, i.e. the greatest possible satisfaction received directly from the benefits provided by goods purchased on the market (Dach 2001). Utility maximisation depends on the level of income and the prices of goods. Changes in demand not linked to changes in real income and relative prices are attributed to changes in taste. Thus, according to the microeconomic theory of utility, consumer behaviour is fully explained by these three factors together: income, consumer taste and prices of goods.

Two takes can be distinguished in the microeconomic theories: a traditional one and another one derived from the category of so-called "disclosed preferences". In the initial version of the theory of choice (traditional approach), economists gave a subjective character to the concept of utility, linking it to the psychological attitude of specific individuals (consumers) to specific goods. Gossen, who assumed that a human directs his or her life is in such a way so that the sum of utility (satisfaction) be as high as possible (Begg et al. 1995), was the precursor of this approach. He also formulated certain patterns, named the first and second Gossen's laws after his name. Gossen's First Law states that "the amount of one and the same enjoyment diminishes continuously as we proceed with that enjoyment without interruption, until satisfaction is reached". In modern times, this law is known as the Law of Diminishing Marginal Utility'. In other words, the law tells that the marginal utility of a good for a person diminishes with every increase in the stock that he already has. Gossen's Second Law tells that each man will spend his money on different commodities in such a way that the amounts of all enjoyments are equal. Thus Gossen explained that maximum enjoyment will result from a uniform level of satisfaction. In modern terms, Gossen's second law is known as the Law of Equimarginal Utility.

Later consumer behaviours were examined by Jevons (the classical school), Menger (the psychological school) and Walras (the mathematical school), who also gave subjective meaning to the concept of utility.

The theory of utility was further analysed and modified by many economists such as Davenport, Wicksteed, Fetter, Knight, and Edgeworth, who departed from studying the utility of a particular product and accounted for the existence of interdependence in using various goods. He claimed that the combined utility of goods is not a mechanical sum of their individual utilities, but a function of many variables, including the quantities of individual goods. Such reasoning was an introduction to the choice theory, but Edgeworth did not eliminate subjectivity from the definition of usefulness.

Pareto is considered the representative of the preferences and choice theory. He sought to break with the concept of utility and, above all, to stop measuring it. He replaced the quantifying take with an ordering take. In this respect, each combination of goods is only characterized by a certain indicator to determine whether it is more or less useful than another combination.

The application of traditional microeconomic theories to the analysis of consumer behaviour in contemporary market conditions is incomplete and limited, as these concepts do not take into account changes in consumer needs and the means used to meet these needs. These do not include phenomena such as the emergence of new, previously unknown products or changes in the quality of products already in existence (most often due to technological progress). Scientists have therefore tried to modify the theory to extend its scope of applications. In this vein, Becker assumed that the consumer's choices are about specific "objects" or "conditions" known as goods (Becker 1990). As a direct source of utility, these goods are produced by the consumption unit itself in the course of productive activity. According to Becker, the productive activity consists of coordinating ("combining") purchased market goods and services with certain time resources available to households. From this perspective, all market goods are inputs in specific production processes of the non-market sector; these are mainly consumers and households whose demand for these goods is a derived demand, analogous to the derived demand for production resources in a company (Becker 1990). The author of the new approach to the theory of choice assumes that households, reacting to changes in such factors as the number of commodities, their prices, the amount of available time, variables characterizing production skills or the level of technology used in the production process, or income, strive to maximize their utility while keeping production costs constant. Time plays a special role in the discussed concept as Becker considers it as a scarce resource at the household's disposal. Not only do consumers sell time on the labour market, but also buy it in the form of many goods and services. Equipping households with a car or a washing machine save them time, which they can allocate to other activities, such as leisure.

Lancaster's (1996) concept of characteristics was another step towards making the choice theory more realistic and useful in practice. At its core, this theory asserts that consumers value goods mainly because of the services they provide, the so-called characteristics. According to Lancaster, goods as such are not direct objects of utility for the consumer. The consumers aim to get the most desirable attributes of products (their characteristics), appropriate to their tastes and preferences. Thus, the demand for products derives from the demand for attributes.

This theory was then brought significantly closer to reality with the concept of consumer behaviour of Katona, the founder of the so-called psychological economics. According to Katona, psychological factors play the most important role in shaping behaviour, especially in the consumer decision-making process. Among certain psychological variables, a special role is attributed to attitudes. He argues that attitudes significantly influence purchasing decisions. A negative attitude would not lead to product purchase even when the need is quite intense, while a positive attitude towards a particular good will often result in a purchase even when the need itself is quite weak (Katona 1964, p.28). Thus, the satisfaction or failure to satisfy a need is not solely dependent on economic constraints but is also the result of strictly psychological factors. As Katona argued, the main problem lies merely in finding the right combination of psychological and economic variables.

Consequently, Katona aimed to construct a consumer model based on four principles:

1. Consumer behaviour is a function of both changes in the environment (external stimuli) and the individual. The stimuli themselves do not condition the response but reveal it according to the motives and needs of the respondent. Thus motives, opinions and attitudes are variables mediating between stimulus and response.
2. Consumer individuals function in larger social groups. Motives and attitudes vary among these groups, but they are similar within a given group.
3. The hierarchy of needs is far from constant.
4. Consumer behaviour is often characterised by the so-called habitual behaviours, which are the result of previous experiences and therefore the result of a learning process (Katona 1968).

It is also worth mentioning that Katona rejects the so-called hypothetical microeconomic entity, driven directly and exclusively towards his or her benefit, making rational decisions, i.e. choosing a basket of products mainly under the influence of economic factors (income and prices) to maximise satisfaction. He believes that it is “improbable that the consumer has such a well-organised and stable set of preferences and such a computational proficiency that would enable him or her to compute which of the possible actions would bring the highest satisfaction”. He also argues that consumers only behave rationally in rare cases, e.g. when buying a house, very expensive products, etc. According to Katona, typical consumer behaviour is impulsive and repetitive following past patterns (Katona 1975). When assessing Katona's model we see that it is closer to reality than the classical models of rational consumer behaviour.

Another stage in the development of concepts related to consumer behaviour is associated with the emergence of various economic models. Using models developed in the form of diagrams,

researchers tried to integrate all existing knowledge and strived for a holistic view of consumer behaviour. With respect to their frequency of mentions in the literature, popular models of consumer behaviour include:

- the decision-making process model by Kotler,
- the model of consumer behaviour of Andreasen,
- Nicosia's decision-making model (1996),
- consumer learning model by Howard and Sheth,
- consumer behaviour model by Engel, Kollat and Blackwell,
- O`Shaughnessy`s model of consumer behaviour (1994).

These models are among the many that can be used to reflect consumer behaviour. Although each of these models captures consumer behaviour differently, the mere essence of the process itself is the same in all of them. Needs are the basic stimulus motivating consumers to act. Under their influence, the consumer engages in market activity shaped by various factors: incentives, inhibitors or conditioning factors alike. Ultimately, it is the interaction of all the factors that influence the complexity of the consumer's decision-making process culminating in making a choice. However, the decision-making process relating to the purchase of a product satisfying lower-order needs will be different from that of a product satisfying higher-order needs. In the first case, purchases require much less analysis than in the second situation, where more thought is required on the part of the consumer. Thus, the consumer's decision-making process becomes more complex and requires more comprehensive analysis. The wide variety of consumer behaviours can make it difficult to choose an appropriate model that would comprehensively cover all the aspects of consumer decisions.

1.3. Determinants of consumer behaviour – a review of different approaches

Consumer behaviour is a complex phenomenon. Consumers are influenced by a variety of factors that may both inhibit and stimulate their behaviour. Understanding why a consumer behaves in a certain way is very difficult. Subject literature discusses various approaches to these factors and they are analysed on many levels. Every consumer who decides to buy a good or use a service expects, above all, certain benefits. For this purpose, he or she selects such a set of goods or services which, with limited resources, would ensure maximum satisfaction of

needs. The purchase is conditioned by numerous past experiences and expectations for the future. Internal factors, therefore, constitute the first, key set of determinants conditioning consumer behaviour. They develop under the influence of various external factors – such as the environment, groups and people with whom the consumer hangs out, or his or her situation. Moreover, please note that the choice of food is a complex process determined by many factors influencing human behaviour in different ways.

The factors influencing consumers purchase decisions can thus be divided into those that directly depend on them and those that accompany purchases, i.e. the shopping environment and atmosphere. The influence of consumers' personalities is often confronted with factors originating from the environment. As a result, various determinants of purchase behaviour emerge rooted in economic, demographic, social, psychological factors (Roszkowska-Hołysz 2013).

Gajewski (1994) distinguishes three groups of factors conditioning consumer behaviour:

- individual factors, related to internal conditions, such as attitude, perception, motivation, personality,
- socio-cultural factors, which constitute a set of attitudes accepted in a given community such as family, peer groups, culture, social class,
- economic factors, which include income, prices of products and services, supply.

Mynarski (1994) presents a different approach to the determinants of consumer behaviour and he distinguishes two groups of factors:

- endogenous, related to the immediate environment of household members; these include income, household size, family life cycle, occupational structure, social class, place of residence, role in decision-making,
- exogenous, related to the environment in which the household is located, i.e. prices on the market, supply, state policy regarding consumption, etc.

Kotler and his colleagues (Kotler et al. 1996), distinguished four groups of factors influencing buyer behaviour. These are:

- cultural factors such as culture, subculture, social class
- social factors including reference groups, family, role and status in the society
- personal factors such as – age, life cycle stage, profession, material situation, lifestyle, personality
- psychological factors such as motivation, perception, selective memory, learning process, beliefs.

To understand consumer behaviour, Wood (2010) distinguished four groups of factors, but he puts them slightly differently than Kotler. Figure 2 shows the breakdown of behavioural determinants according to Wood.

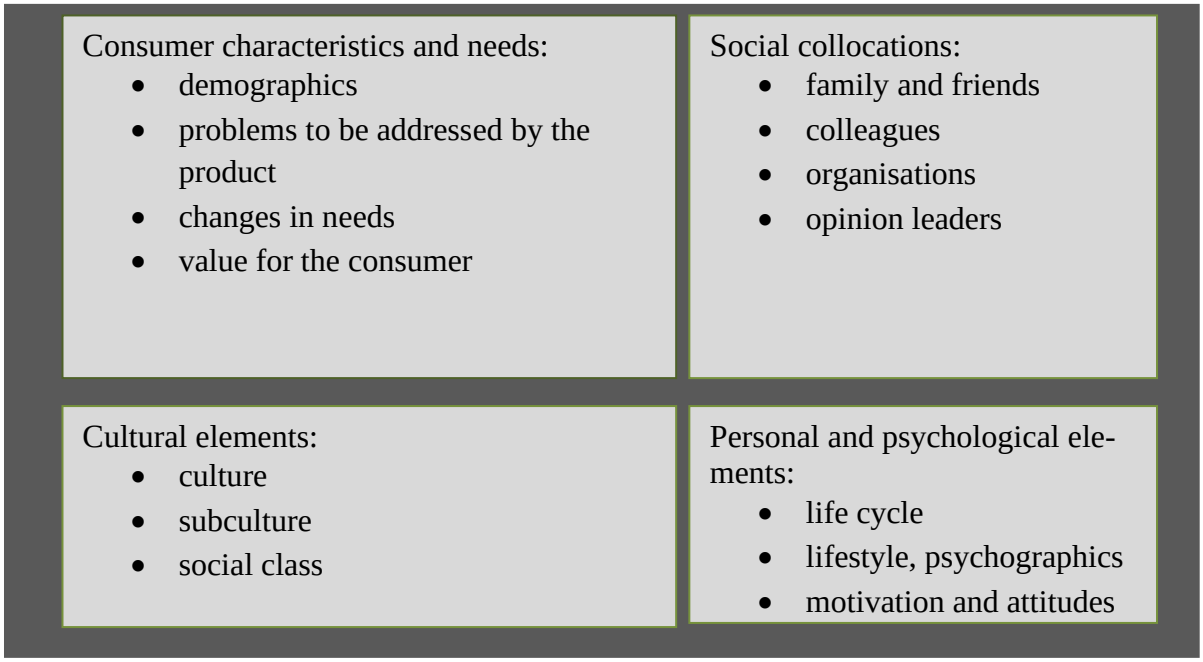

Figure 2. Factors determining consumer behaviour according to Wood

Source: (Wood 2010).

Researchers dealing with consumer behaviour disagree on the identification of groups of factors influencing consumer behaviour, which is proven by the great variety of classification of consumer behaviour determinants in the subject literature. In addition to the classifications of factors shaping consumer behaviour discussed above, Table 2 presents other equally important classifications by various authors.

A large number of factors determining consumer behaviour and their interdependencies are discussed in the literature. An analysis revealed that they can be assigned to one of three groups. Thus, three vast groups of factors influencing consumer's food choice can be distinguished (Shepherd 1998, Babicz-Zielińska 2001):

- product-related, referring to its physical and chemical properties, sensory characteristics (taste, smell, appearance, texture), functional characteristics (packaging, availability, convenience), or nutritional values;
- consumer-related, which include personal characteristics (age, gender, education), psychological factors (personality, experience, moods), physiological factors (health condition, hunger satisfaction level);

– environment-related, including economic factors (price, income), cultural factors (beliefs and convictions), social factors (social role and status, opinion leaders, reference groups).

Table 2. Determinants of consumer behaviour according to various authors

Authors	**Factors shaping consumer behaviour**
T. Zalega	biological, demographic, psychosocial factors
E. Kieżel	economic and non-economic factors – external, internal and subjective (motives, habits, perception, habits, personality, attitudes, tradition)
L. Rudnicki	internal factors (psychological, personal and demographic) and external (socio-cultural, economic)
L. Garbarski	demographic, economic and socio-psychological factors
G. Światowy	psychological, social factors (immediate and further environment), economic factors (external such as income of the population, wages, prices of products; and internal such as household budget, rationality of spending)
G. Maciejewski	subjective factors (e.g. habits, attitudes, character, culture, knowledge and faith) and objective factors (economic: internal and external and non-economic: internal and external)

Source: Own study based on: (Garbarski 1998, Rudnicki 2004, Światowy 2007, Kieżel 2010, Maciejewski 2010, Zalega 2012).

An important factor influencing consumer behaviour is information. Parlińska and Parlińska in their research, emphasize the role of information in the modern economy and point to

the diversity of information sources (Parlińska 2008, Parlińska and Parlińska 2021). Many of these sources of information are important in the process of making purchasing decisions of consumers, therefore information is a key factor determining the market behaviour of consumers.

As shown in this part of the work, consumer behaviour is the resultant of many factors. Acknowledging them and determining the directions and ways of their influence on the consumer, allows companies to design effective marketing strategies. Please note food is a specific product category. According to Bartkiene et al. (2019), the major determinant of food choice is hunger, but if we have options what we choose to eat is not determined solely by physiological or nutritional needs. The consumers' gender, age, and education level, along with perception, emotional motivations, and selection of information sources about healthy eating should also be taken into account. According to the European Food Information Council (EUFIC), food induced emotions are very important, as food choice can also depend on our mood. Consumers' behaviour on the food market depends on the level of satisfaction of their needs, an important factor also being the consumers' nutritional awareness, which can be defined as the state of knowledge, views and ideas on the role of nutrition in human life, its threat and protection.

1.4. Contemporary trends in the development of food consumption

1.4.1 Consumer trends and megatrends

Over the course of the 20th and 21st centuries, many global trends (megatrends) have emerged, reflecting the social, economic, political, legal, demographic and technological changes that have occurred over this time period. These megatrends are described by all phenomena, both positive and negative, manifesting over a long time horizon and are characterised by a high power and scale of impact on the human environment and its surroundings (Grzega and Kieżel 2017). Therefore, one can agree with the view of Mruk that consumption macrotrends are objective long-term trends in the general choices, behaviour and preferences of consumers (Mruk 2007).

From the point of view of identifying trends in consumption and consumer behaviour, it is important to follow global trends (Westbrook 2012).

Contemporary trends are caused by various factors and are connected with:

– an uncertain future

- expansion of the middle class in emerging markets,
- perceived poor prospects for young people,
- income inequality
- climate challenges,
- ageing populations
- urbanisation in emerging markets,
- increasing human mobility
- increased use of the internet
- increasing spread of Chinese brands.

The events of the first and second decades of the 21st century, including the global economic and financial crisis, Brexit, and the migration crisis, caused many phenomena which can be considered undesirable from the point of view of contemporary consumers' sense of security and standard of living. The pandemic COVID-19 in 2020 also had a significant impact on reducing the consumers' sense of security. This translates into greater consumer caution when making purchasing decisions and developing protective attitudes. According to research conducted by ARC Rynek i Opinia during the COVID-19 pandemic, consumers are taking more responsibility for their behaviour. A manifestation of these changes is a gradual departure from consumerism, a shift towards rationalism, and a change in consumer behaviour towards more socially responsible, pro-ecological choices (ARC 2020).

Another global trend driven by economic growth is the expansion of the middle class in emerging markets. This manifests itself in the transformation of the consumers in these developing countries, who demonstrate increasingly sophisticated needs and ways of satisfying them. There is a change in position up the hierarchy of needs, reflected in the growing demand for higher-order products such as culture, recreation, housing, and catering services. As a result, the patterns of behaviour of this new aspiring social class will change over the long term.

The third megatrend, poor prospects for young people, is a symptom of the negative effects of the recession in many developed economies. Underlying the frustration of young people is an unstable economic situation characterised by high unemployment, rising living costs, and the burden of supporting an aging society. The consequences of such a situation may be manifold: the lack of independence of young people causing long-term dependence on their parents, leading them to establish their own families at a later age. The consequence of such events are changes in the arrangement of household needs.

The next trend, social inequalities, is also an effect of economic growth. The essence of this trend is to see the causes of growing social unrest related to the deepening of feeling of social injustice at the widening wealth gap, whereby the rich are getting richer and the poor suffer ever more impoverishment. This has a significant impact on the process and methods of satisfying the consumption needs of both rich and very poor people.

Another megatrend, climate challenges, refers to the threats resulting from climate change caused by global warming and environmental degradation. The increase in demand for consumer goods, and the resulting increase in their production, places a greater demand on natural resources. One response to these processes is the development of more ecologically-ware consumption and more conscious use of natural resources. The aforementioned phenomena constitute the basis of sustainable development, a movement based on maintaining harmony between the economy, the environment and society within the framework set by the ecosystem (Kassenberg 2012).

The next of the megatrends listed, aging populations, is the result of increasing life expectancy in societies combined with lower birth rates. This situation brings challenges on various levels (Nawaz Cheema 2012). The consequence of these events is a shift in activity from the sphere of production to the sphere of consumption. This translates into changes in the area of demand, the creation of new needs, and novel ways of satisfying them. On the supply side, it increases the demand for certain specialised services due to an aging population.

The process of population migration over the last dozen or so years has undergone a variety of changes. When it comes to rural-to-urban migration in emerging markets, it is closely related to fuelling the economy. However, economic migration is of a different nature, which is manifested in the movement of people within the European Union countries. Yet another migration trend, caused by persecution, conflicts, or acts of violence, is related to the movement of people from countries where there is civil unrest. The migration process described above has many economic and social consequences.

Another trend, increasing mobility of people, is a notable feature of our times. The basis for its development is the continued development of modern forms of transport and their greater availability to the masses. This situation influences the creation of many needs related to travel including tourism, working abroad, and maintaining contact with family and friends living outside the country. Undoubtedly, this increases people's interest not only in sightseeing, but also in living, studying and working outside the home country. The consequence of these events is the increase in human migration and stimulation of economic growth (Westbrook 2012).

Another megatrend is increased use of the internet, as well as closely related technical and IT progress. The development of the internet has resulted in its increasing availability via various mobile devices, and its adoption across a growing range of the demographic cross-section of society. Of particular importance to social lives are the changing forms and methods of communication through the increasing use of the publicly available social media network. Increased internet use is also conducive to the development of online sales networks and, as a result, easier access to goods and services offered through online sales points. As a result of these events, patterns of consumer behaviour are changing.

When discussing global trends, it is impossible not to notice the increasing spread of Chinese brands. This trend has been triggered by the recent global expansion of China, which is reflected in the increasing penetration of Chinese brands into Europe and North America (Westbrook 2012).

These large changes in global trends constitute the framework for the development of contemporary consumer trends, which include: deconsumption, conscious consumption, collaborative consumption, freeganism, prosumption, smart shopping and human-centrism, virtualisation, home-centralisation (Table 3). A trend is defined as a process of change, which is perceived from a psychological, economic or sociological perspective, and may be short-term or long-term, as well as regional or global (Vejlgaard 2008). In the long-term perspective, trends can significantly affect the purchasing behaviour of consumers, which in turn leads to changes in consumption patterns. Trends change over time and are characterised by coexistence and divergence. New trends in consumer behaviour emerge on the basis of economic, social and cultural transformations. In recent years, the dynamic development of the following trends due to the processes mentioned have become worthy of note:

- ecological or 'green' consumption
- virtualisation
- socially responsible and sustainable consumption,
- collaborative consumption
- *so-called 'smart shopping'*

Deconsumption is defined as the deliberate and intentional limitation of the volume of consumption of products and services to more modest levels from the point of view of the individual. Within the deconsumption trend, four dimensions are distinguishable: limiting consumption due to greater financial uncertainty in the situation of households, limiting the larger amount of goods consumed in favour of smaller quantities of higher quality, reducing material

consumption in favour of service consumption, and limiting consumption for ideological reasons. A very closely related concept to deconsumption is eco-consumption, also called ecological or sustainable consumption. Eco-consumption consists in the deliberate attempt by individuals to minimize the negative effects resulting from the consumption of consumer and investment goods and services, through rationalization and exploitation of production factors, i.e. resources, and reducing the amount of post-production and post-consumer waste (Nowalska 2007). There are numerous examples of such ecological consumption, such as: the trend towards so-called "healthy food", switching to reusable shopping bags instead of plastic carrier bags, choosing transport and tourism that is perceived not to degrade the natural environment, and so on.

Table 3. Characteristics of contemporary consumer trends

Term	**The principles underlying the term**
Deconsumption	limiting consumption (economic instability of households), replacing quantity with the quality of consumed products, servicing consumption, reducing consumption
Eco-consumption	striving to rationalise resources and reduce the production of post-production and post-consumer waste, minimising the negative effects caused by the consumption of consumer and investment goods and services
Conscious consumption	purchasing products and services perceived to be friendly to people and the environment, reducing use, sharing, re-using of products
Collaborative consumption	creating a consumption model based on borrowing, exchanging, barter agreements or temporary paid access to goods, while limiting individual consumption or ownership, strengthening social ties.
Freeganism	referring to the leading idea of freeganism – striving to limit consumption and participation in the conventional economy by using resources that would otherwise be wasted.
Prosumption	conscious purchase of products, based on the consumer's knowledge about them, and the idea of in some way being both a provider and a consumer of the product, being active in transferring knowledge to others, involvement in the design and sale of the product
Virtualisation	the use of electronic means of communication, mainly the internet, in the process of purchasing consumer products
Smart shopping	showing the discerning ability of the consumer to purchase products via the internet, demonstrating austerity and rational attitudes when making decisions, making informed calculations and displaying cleverness
Home-centralisation	transferring consumption from public spaces to the home, which becomes a place of meeting cultural, educational, and recreational needs in the field of health care, etc. This trend is related to the process of satisfying various consumer needs, and is the result of easier access and greater availability of equipment to householders that meets their requirements

Source: Own study based on: (Zalega 2013, Lemanowicz and Szwacka-Mokrzycka 2019).

There is a close relationship between eco-consumption and other current consumer trends, which include: conscious consumption, collaborative consumption and freeganism. Conscious

consumption is predicated on making responsible consumer choices based on awareness of the social, environmental and political consequences of those choices. Conscious consumption is not only concerned with the purchase of products and services that are friendly to people and the environment, but is also related to the search for better solutions regarding the reduction of use, sharing and re-use of products (Zalega 2013). Another trend that has emerged in the last decade is collaborative, as opposed to individualistic, consumption. It is a consumption model that consists of borrowing, exchanging, bartering contracts or paid-for access to goods, without the necessity of owning them personally (Gansky 2010, Botsman and Rogers 2012). The rationale of this trend is based on the desire to reduce individual consumption while strengthening social ties.

Related to eco-consumption, another trend has emerged known as freeganism. The driving concept behind this trend of this direction is saving and making rational purchases as well as striving to limit consumption by accessing resources that would otherwise be wasted or under-utilised. The supporters of this trend are usually people with a high level of awareness, usually educated and often characterised by a high economic status. This trend is reflected in the following activities: waste recovery (including food), minimisation of the amount of waste produced, ecological transport, socialisation of unused apartments, self-sufficiency by searching for food in garbage cans, growing vegetables and fruit for one's own needs, creating one's own everyday objects, as well as reducing the amount of time spent in paid work in order to devote more time to the family and local community (Szydłowska 2012). One manifestation of freeganism on the food market is the acquisition and utilisation of short-dated food products thanks to the practice of charitably donating these products to worthy causes by restaurateurs, hoteliers, and various retailers. They might, for example, leave dishes or perishable products in the back room that have not been sold on a given day to be donated to someone who could use them rather than just sending them to landfill.

Another consumption trend – prosumption, also referred to as intelligent, or innovative, consumption – is defined in the literature on the subject as a portmanteau combination of production and consumption processes. In practice, this means that the consumer of a good is also in some way its producer (Toffler 1997). The main idea of prosumption is the concept of innovative and entrepreneurial consumption, using the consumer's own creative invention (Zalega 2013).

Smart shopping – another consumer, has had a significant impact on changes in consumer behaviour for recent years. Smart shopping can be defined as the intelligent ability of the

consumer to purchase products via the internet, demonstrating money-saving and rational attitudes when making decisions. The decision-making process is accompanied by careful calculation and perceived clear-headedness, which is manifested in the purchase of products based on practical characteristics such as: best price, best quality, good manufacturer reputation, and alignment with the trusted opinions of fellow internet users. This trend is very closely related to the ease with which the internet consumer can have greater involvement in searching for information about promotions, comparing prices of various products and, as a result of these activities, making rational purchasing decisions.

Smart shopping is very closely related to another trend, namely consumption virtualisation. Virtualisation as a trend is associated with the use of electronic means of communication, mainly the internet, in the process of purchasing consumer products. The growing interest among consumers in the trend of virtualisation of consumption is related to the development of modern information and communication technologies. Virtualisation of consumption is becoming more and more important in our social lives, as evidenced by the constantly growing number of internet users, the increasing amount of time spent on using television, computers and the internet, the growing popularity of online purchases of goods and services or group purchases. Finally, it is also worth mentioning another consumer trend, home-centralisation of consumption. This refers to the transfer of consumption from public spaces to the home, which becomes a place of meeting cultural, educational and recreational needs in the field of health care, etc. This transition in the process of satisfying various consumer needs is the result of easier availability of resources to householders that can meet their requirements. The increasing participation of women in paid work has indirectly contributed to the development of a macrotrend of so-called lazy or comfortable consumption. It is based on an interest in products that somehow make life easier or more comfortable. This has resulted in an unprecedented increase in demand for products characterised by a high degree of pre-preparation for consumption, such as Cuppa Soups, Pot Noodles, instant desserts like Angel Delight, etc. There has been an increased use of ready meals and partially-prepared food products, ordering food and dining out, and using professional services of catering companies, particularly for events like family celebrations, communion parties, religious holidays, etc. All these consumer behaviours of modern households have contributed to the dynamic development of a more service-based model of consumption.

In recent years, the Polish market has witnessed a dynamic development in the trends of virtualisation, greening of consumption and so-called smart shopping. This has only been intensified, starting from 2020, by the pandemic situation caused by COVID-19. At the same

time, there has been a decline in interest in the trends of collective consumption, deconsumption or other behaviour included in sustainable consumption.

1.4.2. Directions of changes in the behaviour of food consumers

As has already been said, the factors inherent in the broadly-understood environment are significant stimuli for changes taking place in the size and structure of consumption and consumer behaviour in the marketplace. The key factors here are the technological development, socio-demographic and economic changes taking place over the last 20 years in terms of individual countries and regions, as well as around the globe.

The directions of these changes are usually categorised into three groups:

- the market environment of consumers and the conditions it creates to meet the needs of consumers,
- ways of satisfying the needs, shopping habits, purchasing and consumption behaviour of consumers,
- the structure of buyers' needs, their attitudes and lifestyle (Olejniczuk-Merta and Garbarski 2017).

The basis for researching consumer behaviour and tracking the direction of its changes is accepting its global character. The research carried out in this area was divided into two groups. The first is the behaviour and behavioural trends both in the market and in individual households. The following elements are included here:

- being and staying healthy,
- convenience
- comfort
- sensuality,
- individualism
- need to make contacts.

The second group includes changes resulting from the relevant stages of the consumer's life, income, approach to age and gender.

Of particular importance in shaping the behaviour of modern consumers is a new approach emphasising care for personal health, and on this basis creating a lifestyle trend known as wellness. There are various elements at play which have a direct and indirect impact on the physical and mental health of the consumer. The following of which should be mentioned here:

- concern for the acquisition of the so-called safe products, both food and non-food,
- purchasing local products,
- use of the so-called bulking diets,
- consumption of products that increase the feeling of fullness,
- purchasing low-fat, low-calorie products, following a balanced diet,
- associating yourself with authorities in the field of health protection and healthy life-style,
- taking steps to reduce stress,
- paying extra attention to external appearance,
- showing care for a healthy environment,
- self-treatment and disease prevention (Kusińska and Olejniczuk-Merta 2009).

The care for comfort manifests itself primarily via:

- simplifying the preparation of meals and greater use of pre-prepared products,
- increasing the frequency of eating meals while reducing their size,
- combining many daily activities, such as quick shopping and eating healthy products outside the home,
- reducing the time associated with shopping on the one hand, while celebrating shopping in shopping malls and hypermarkets on the other (Barber 2008, Lindstrom 2009).

The main factor contributing to changes in consumer behaviour in 2010–2020 is the change in the family model and the fast pace of consumer life, combining on-line shopping with traditional shopping (Roland Berger Report 2016, Dejnaka 2017).

Directions of changes in purchasing behaviour:

- a new family model – an increase in single-person households and female economic activity. A model focused on both traditional and online shopping. Professional activity of women is connected with taking care of one's health and the quality of consumed meals;
- the fast pace of life – changes in shopping behaviour towards increased interest in the discount sales and convenience network – proximity to the place of residence;
- changing eating habits towards buying and consuming healthy, organic, and unprocessed food. An increased interest in supermarket own-brand labels, consumers increasingly choose products under the brand of retail chains. Own-brand supermarket labels are positioned as a combination of good price and innovation Applying especially to ready-meal dishes such as soups, vegetarian dishes, salads, the reason for buying own

label products is not only the low price and innovation, but also the perceived 'value' they provide Simply put, these are quick and healthy meals, vegetarian products, lactose-free milk, pate without meat;

- Purchasing virtualisation – the development of online shopping as a result of the development of digitisation, smartphones and e-commerce – this especially applies to young consumers;
- Increased interest among consumers in personalised shopping.

1.4.3.Greening of food consumption in the light of research results

In the light of the different conducted research, most consumers have a positive attitude towards organic food (Magnusson et al. 2001). It is true that this does not have a significant impact on the volume of purchases of these products. The share of organic food in total purchases is still at a relatively low level in the world, from 1% – countries of Southern, Central and Eastern Europe, to 5% in Austria and Denmark (Sahota 2009). The presented numbers hide the cumulative influence of various factors on the shaping of consumer behaviour in the indicated market. In order to expand on these mechanisms, it is necessary to trace the models developed on the basis of the Schwartz value theory and Ajzen's theory of planned behaviour. The theory of planned behaviour is based on the theory of deliberate actions (Ajzen 1991). In these theories, the basic factor explaining behaviour is the intention of a given person to perform a specific activity. The other elements influencing the intention and the behaviour are the attitude towards the behaviour, subjective norms, and perceived control. Based on Ajzen's theory, behaviour can be interpreted directly through the intention to perform it and the perceived control. There is a direct relationship between perceived control and behaviour when there is a correspondence between the perceived control and the actual control in a given situation. The presented theory can be helpful to explain the behaviour on the food market in general, but also in relation to organic food (Ajzen and Fishbein 2008).

The Theory of Values (Rokeach 1973) is also widely used in the interpretation of consumer behaviour of organic food. Research based on the Schwartz value model was conducted using a variety of methods, ranging from questionnaires, through experiments, to narrative methods. The selection of respondents for the research was representative, including children, adolescents and adults living in all European countries. Schwartz defines values as “a cognitive representation (usually belief) of a motivational, desirable, supra-situational goal, constituting a guiding life message...”. The main thesis of Schwartz’s theory is based on two features of the

value structure: continuum and circularity. The continuum of values is motivational, which means that values situated next to each other are motivationally similar; they can be realized in one action (Schwartz 2006). The continuum of values has the shape of a circle, which shows that the principle of the similarity of adjacent values is supplemented by the principle of the incompatibility of opposite values, situated on the opposite side of the circle. Inconsistency in this interpretation symbolizes the difficulty or impossibility of simultaneous realisation, and the contradictory consequences of realising these values in one action.

Based on many years of psychological research, Schwartz proposed dividing the continuum into 10 basic values or four so-called higher-order values that interpret global cultures. Higher-order values represented the ends of two dimensions forming a circle: self-crossing versus self-empowerment, and openness to change versus conservatism. On the basis of the values distinguished, a number of controversies were raised by other researchers. The results obtained by Davidov (2008) did not undermine the circular model, but caused the catalogue of 10 Schwartz values to be questioned. As a consequence, Schwartz developed a modified circular value model. In light of the new division of the continuum of values, two related procedures were used. The first was to increase the homogeneity of the distinguished values, and the second was to increase the number of values. This striving to increase the homogeneity of the distinguished values resulted in the need to distinguish narrower wedges of the value wheel. As a consequence, the entire space was described with 19 values.

In the light of the presented approach, the following three groups of factors were analysed: values, attitudes and emotions.

As for the first group of factors determining the consumption of organic food, it includes values, created primarily on the basis of product safety, hedonism, stimulation, and universalism. There is a popular view in the scientific community that all hierarchies of values are variable and subjective. Subjectivism results from the fact that each person creates a hierarchy of importance according to himself, arranging them roughly or incompletely. This statement translates behaviour in terms of social, ethnic and national groups. They also have their own specific ethos (Brzozowski 2005). This view, however, contradicts the statement made by many scientists that there is a universal hierarchy of values. In the light of the above-mentioned division of factors determining the consumption of organic food, it can be concluded that although the creator of the Theory of Value, Schwartz, searched for universals in the world of values, in the understanding of universal categories of values they were organized according to the principles of content-similarity-dissimilarity and compatibility-contradiction. Thus, Schwartz excluded a universal hierarchy based on subjective feelings of the importance of values, which is in line

with the views of most social scientists. The value system relates to attitudes that are stable and closely related to the individual cognitive system. The point of reference for most of them is Schwartz's theory of 10 values.

Many studies show that the consumption of organic products is associated with care for health. As indicated by researchers in recent years, the system of professed values, including a sense of security, hedonism and stimulation, is gaining more and more importance in making decisions about eating organic food. Therefore, it is the system of professed values that instigates the purchase and consumption of these products (Chen 2009).

When it comes to the taste of organic products, the research shows that it is the most important selection criterion for Swedish consumers when buying milk, meat, potatoes, and bread. This criterion is also important for Danish, British, Irish, Dutch and Greek consumers (McEachern and McClean 2002). The willingness of buyers to buy new products that appear on the market is also of importance in making decisions about the purchase of organic food. This group of novel products still includes organic food. The basis for this is the desire to pay tribute to new, health-promoting products (Chinnici et al. 2002).

The development of this trend, expressed in positive attitudes towards organic food, is documented by the results of research conducted among Italian consumers of fruit and vegetables. These consumers display pro-health attitudes and adhere to a healthy lifestyle. Also, research conducted on the Danish market among consumers of fresh and preserved tomatoes confirms this tendency (Thogersen 2009) It is important to emphasize the fact that another determinant of organic food consumption – emotions – is associated with the strongest physiological reaction. Research in this area was conducted at various levels: general, including the division into positive and negative emotions; detailed, including four positive (contentment, happiness, love, pride) and four negative emotions (sadness, fear, anger and shame) – (Laros and Steenkamp 2005). Verhoef's research results (Verhoef 2005) confirm the influence of emotions on the purchase of ecological products. Verhoef showed that among the three analysed emotions (fear, guilt and empathy), fear has a particular influence on the purchasing decisions of consumers. This is especially true of the purchase of meat. This has been documented in the research conducted by Lerner and Keltner (2000), Watson and Spence (2007). They showed unequivocally that it is the “fear” of possible health risks that influences the purchasing behaviour of buyers of organic meat.

On the other hand, the main motives for buying organic food in France are altruistic and selfish. The results of research conducted among French consumers indicate a certain balance

between these two groups of motives, i.e. altruistic, resulting from concern for the natural environment, and social and selfish concerns caused by consumers' desire for good health and well-being through better quality products – (IMAS International 2017).

Research conducted in Poland on the motives of purchasing organic food, selfish motives, such as desiring to secure good health and well-being thanks to the consumption of these products by consumers, definitely prevail. This is confirmed by research conducted in Poland during the second decade of the 21st century. The results of research by Grzybowska-Brzezińska lead to the conclusion that the main motive for purchasing organic products is care for one's own health and family, and not pro-social reasons (Grzybowska-Brzezińska 2011). Research conducted by Sobczyk (2018) shows that 15% of consumers buy organic food frequently. The share of such food in total food expenditure varies and ranges from 5% to 20%. The main reasons for purchasing organic food are: health safety, higher quality than conventional food and local origin (Sobczyk 2018). A study conducted by Szwacka-Mokrzycka and Lemanowicz (2020) shows that consumers who buy organic products are mainly driven by the composition of the product and its quality (80% of indications each), as well as a desire to care for their health (67.5%) and the health of children (20%). Other factors, such as the certification a product or manufacturer reputation received smaller numbers of indications. The surveyed consumers also pointed to the experience of healthy eating at home as a factor influencing the purchase of this food (45%) and the current fashion for healthy eating (65%). This confirms the importance of not only the features related to the product itself, but also certain values, experiences, emotions, and so on in the purchasing behaviour of organic food consumers (Szwacka-Mokrzycka and Lemanowicz 2020). Mazurek-Łopacińska (2020) arrives at a similar conclusion, stating that among Polish consumers, selfish motivations prevail, resulting from consumers' desire for good health and well-being thanks to better quality products. In the light of the presented approach, the following three groups of factors were analysed: values, attitudes and emotions.

2. Changes in the food consumption and the level of satisfaction of nutritional needs

2.1. The economic background in Eastern European countries

2.1.1. Measures related to the assessment of the standard of living

The notion of a standard of living is related to the possibility and the degree of satisfying material and non-material needs which determine the quality of life of households. From an economic point of view, household income and expenses emerge as the most important elements in determining the standard of living and its changes. From this perspective, income stratification, which leads to inequalities across the country and the region of the EU Member States, is considered to be a significant threat in this regard. The measure applied to assess the above-mentioned inequalities is the value of the Gini index, whose value is seen to increase in recent years in most Eastern European countries, including Poland, and tends to stabilise in Western European countries. Changes in the level of the indicator may result from the relatively low purchasing power parity of the average household with a rising salary trend. This tendency may be observed in most post-communist countries such as Bulgaria, Romania, Hungary, Greece, Latvia, Estonia and Poland. A marked polarisation of income in individual EU countries implies that significant differences may be recorded regarding the share of consumer spending and the level of household consumption.

There are two basic definitional approaches that distinguish the category of the standard of living from the category of the quality of life. The first approach is based on the classification of the groups of needs (Allardt 1989). Allardt linked the category of the standard of living to material needs, i.e. with the factor of having. On the other hand, the category of the quality of life covered non-material needs, characterised by emotional states and a sense of existence (referring to the ideas of loving and being). In the presented concept of measuring well-being, Allardt pointed out that this measurement should take into account the standard of living and quality of life, using both objective and subjective evaluations. The concept presented by Allardt has been applied by Luszniewicz and Słaby. Luszniewicz defines standard of living as "the degree to which material and cultural needs of households are met by streams of paid goods and services and by collective consumption funds" (Luszniewicz 1982, p. 11). According to Słaby, "the standard of living is the degree of satisfying material and cultural needs with the

existing infrastructure which makes the process of satisfying the needs possible, while the quality of life includes all these elements that are related to human existence, being someone, having a family, colleagues and friends" (Słaby 1990, p. 25).

Another method of distinguishing between categories of the level and quality of life that are dominant in the literature on the subject is related to the way to measure the degree of need satisfaction, and not to the areas of needs covered by the measurement. According to this approach, the standard of living is a description of the degree to which the needs are satisfied by means of objective assessments, and the quality of life is a subjective evaluation (perception) of the degree of satisfying the needs. On the other hand, the areas of life that are subject to observation and assessment, covered by these categories, are (or can be) identical. In the case of objective assessments, the needs of the surveyed individuals (individuals, households) are met regardless of their personal valuations in this regard. In the subjective approach, the assessment of the level of meeting needs is conducted by the parties involved (individuals, households). The presented considerations show that the concepts of the standard of living and quality of life are not univocal, and their definition depends on the researcher's perspective (Słaby 2007). The approach to measuring the degree of satisfaction of needs (well-being), is based on two different systems which are applied to evaluate the level of satisfaction of needs and the overall satisfaction with this level. In the first case, we deal with an objective approach, while in the second – a subjective one.

The next question touched the method of measuring the standard of living of households in the European Union. Two basic measures are applied in this case, namely: the Purchasing Power Standard (PPS) and the Actual Individual Consumption (AIC), which are the basic indicators used to compare the economic situation of people living in households in Poland and other Member States. PPS represents a common reference currency unit applied in the European Union to convert aggregated economic data in such a way as to enable spatial comparisons through eliminating differences in price levels between the Member States. In theory, 1 PPS allows you to buy the same part of a specific basket of goods and services in every economic area. The PPS exchange rate used for reference purposes in the local currency is determined on the basis of the price level in a given economy in relation to the average price level across the EU.

AIC per capita is expressed in PPS units. AIC is the most important variable that the European Statistical Office (Eurostat) takes into account when determining the overall level of well-being in a given country. The AIC is calculated based on the quantity of products and services purchased by individual households. This measure also takes into consideration the

goods received through various types of governmental and non-profit organisations (e.g. health care, education, support for families, etc.). AIC is of great importance in terms of conducting various statistical analyses and forecasts that cover the area of the entire European Union and the European Free Trade Association (EFTA). These data are important primarily from the point of view of making various external decisions (mainly through Community bodies) and coordinating the work of national statistical offices. The annual analysis of the index of actual individual consumption (AIC) aims to unify standard test methods and consolidate general national statistics among the EU Member States.

2.1.2. Household disposable income in 2008–2019

It is observed wide differentiation in disposable income among EU countries. The highest disposable income 2018 are gathered by eleven countries of the "old Union" (Luxembourg, Austria, Germany, Denmark, the Netherlands, France, Belgium, Ireland, Finland, Sweden and the United Kingdom). Post-communist countries, which joined the EU in 2004 or later, had disposable income below the European Union average (Slovenia, Estonia, Czech Republic, Lithuania, Romania, Bulgaria, Poland).

When we follow the changes in disposable income in post-communist countries between 2015 and 2018, the largest increase was recorded in Lithuania (of PPS – 2.6 thousand) and Estonia (of PPS – 2.5 thousand). Countries in which income was increasing significantly more slowly in this period were: Bulgaria (increase of PPS 0.9 thousand), Hungary (increase of PPS 0.7 thousand), Slovenia (increase of PPS 0.7 thousand), Slovakia (increase of PPS 0.3 thousand). In the middle of the ranking of post-communist countries there are Poland and Latvia achieved an increase of PPS 1.5 thousand (Szwacka-Mokrzycka 2020).

In 2018, disposable income in PPS for Poland amounted to 12 952, and it was 20th among 28 EU countries. Poland as one of 15 countries had an income below the EU average, and the difference amounted to over PPS 6.5 thousand. In the group of the EU with disposable income above the EU average in 2019 were developed countries, among others: Luxembourg, Germany, Austria, Belgium. All the developing, Eastern European countries in 2019, were below the average EU disposable income, but it is worth to mentioned, that their situation was differential in analyzed period. In 2018, it was observed the gap between developing and developed countries in households disposable income between 30–62% respectively in Czech Republic and Bulgaria, but in the next analyzed 2019 year it significant improved. It was the result of increasing disposable incomes in majority Eastern European countries. It caused decreasing

the gap in disposal income between EU and post-communist countries by about 2 times in Czech Republic, Lithuania, Poland, Romania. In 2019 still significant below the EU average are Hungary, Latvia, Bulgaria (Table 4).

Table 4. Gross household adjusted disposable income per capita in PPS of EU countries for 2008 and 2019 (EU = 100), based on data PPS *

Countries	**2008**	**2019**
Germany	192.0	130.0
Slovenia	83.5	78.0
Czech Republic	69.6	85.0
Lithuania	64.4	84.0
Poland	55.8	76.0
Latvia	61.0	65.0
Slovakia	66.1	72.0
Hungary	58.0	68.0
Bulgaria	37.9	48.0
Romania	43.9	71.0

*PPS – Purchasing Power Standard, an artificial currency used by Eurostat to express the actual GDP levels, to eliminate the influence of price differences between countries.
Source: Own elaboration based on: (Eurostat).

The assessment of the standard of living in households is associated with the analysis of income inequalities in a particular society. For this purpose, the Gini coefficient is applied. The Gini index is also referred to as the social inequality index, and it is used to measure and express the uneven distribution of household income in numerical values. The Gini index, based on the Lorenz curve, shows the income inequality of a society. This indicator should be interpreted as follows: the higher the value of the index, the greater the income inequality which is recorded in a given country. The Gini index takes a value between 0 and 1 (or if we multiply it by 100, between 0 and 100). Significant inequalities of disposable income are observed in EU countries (on average value 5.2 in 2018). This ratio was lower than average value (from the lowest in Slovakia – 3.0, Czech Republic and Slovakia had nearly similar value of the ratios (3.3 and 3.5, respectively) to 4.8 in Germany, 4.3 – Poland and Estonia). The largest income inequalities had Bulgaria (7.7) and Lithuania (7.1). When we follow period 2008–2018, two countries recorded significant decreases in the value of the income quintile share ratio: Poland (decrease of 0.8 and 0.6, respectively) and Croatia (decrease of 0.5 and 0.2, respectively), and one country with an increase in both periods: Bulgaria (increase of 1.2 and 0.6, respectively).

It is worth to underline that between 2008 and 2015, a significant increase in disposable income inequalities was observed in three Eastern Bloc countries: in Lithuania (of 1.4), in Romania (1.3), and Estonia (1.2). Lithuania was characterized by the largest inequalities in the average disposable income expressed by the income quintile share ratio. In each year analysed, the value of this ratio was the highest in this country. The smallest inequalities occurred in the average disposable income in Slovakia and the Czech Republic. In Poland, the average disposable income inequalities can be compared to the level of the western neighbour – Germany. However, the value of the ratio for Germany oscillates between 4.8 (in 2008 and 2015) and 5.1 (for 2018). In the case of Poland, the value of the ratio is gradually decreasing (5.1 in 2008, 4.9 in 2015, and 4.3 in 2018). In 2019 the Gini coefficient for the EU countries was 30.2%. The highest income disparities among the EU were recorded in Bulgaria, Lithuania and Latvia. A second group with a Gini coefficient above the EU average of 30.2% (in the range of 30.5% to 34.8%) comprised Romania, Spain, Italy, Luxembourg, Portugal, Cyprus, Greece and Estonia. At the other end of the range income Was more evenly distributed in Czechia, Slovenia and Slovakia where the Gini was less than 25%.

Income inequalities within countries may also be illustrated through the income quintile share ratio, which is calculated as the ratio between the share of income received by the top quintile. High values for this ratio suggest that there are still considerable disparities in the distribution of income between upper and lower income groups. In 2019 the income quintile share ratio for the EU was 5.0. This signifies that, on average, the income received by the 20% of the population with the highest incomes was five times as high as the income received by the 20% of the population with the lowest incomes.

Among the EU countries, the income quintile share ratio ranged from a low of 3.3 in Slovakia and Chechia and also below 4.0 in Slovenia, Belgium, Finland and the Netherlands to a value of at least 6.0 in Italy, Lithuania, Latvia, Romania, peaking at 8.1 in Bulgaria. Thanks to the impact of pensions and other social transfers on income inequality in some EU countries these differences have decreased in analysed period.

2.1.3. Actual Individual Consumption (AIC) and GDP in the EU countries as a measure of the material welfare of households

The method of measuring the material welfare of households in the European Union are: Actual Individual Consumption (AIC) and Gross Domestic Product (GDP). The relationship between the economic growth rate and the level of consumption, consists in determining

how the country's economic development affects the wealth of households. It should be noted that the level of individual consumption (AIC) and Gross Domestic Product (GDP) vary considerably across the EU countries. It is closely related to the level of economic development of a particular country. Relatively, the highest indicators were recorded by Luxembourg, Germany, Austria, United Kingdom, Denmark, Finland, Belgium, France, Netherlands and Sweden (from 9 to 35% above the EU average). In turn, relatively lowest indicators were observed in Bulgaria, Croatia, Romania, Hungary, Latvia, Slovakia and Estonia where the ratios were shaped at the level of 30–40% below the EU average. Poland belongs to a group of countries where this figure amounts to 20–25% below the EU average. Apart from Poland, the group includes also the Czech Republic, Greece and Slovenia (Szwacka-Mokrzycka 2018).

The purchasing power parity of the average household in Poland is low when compared to the overall indicators for the EU region despite the upward trend in wages. As far as the ranking of post-communist countries is concerned, we are only ahead of Bulgaria, Romania, Hungary, Greece, Latvia and Estonia. By contrast, the Lithuanians, the Czechs and the Slovaks achieve a higher purchasing power parity than Poland.

Across the Member States in 2019, AIC per capita expressed in Purchasing Power Standards (PPS) varied from 58% of the European Union (EU) average in Bulgaria to 135% in Luxembourg (Table 5). Germany had a second place in this ranking with 22% above the EU average (2019). They were followed by Austria, Denmark, Belgium, the Netherlands, Finland, France and Sweden with levels of 9 to 18% above the EU average (Table 5).

It is necessary to point out the wide range of Actual Individual Consumption (AIC) and Gross Domestic Product (GDP) levels across the EU countries (Table 5). The relatively highest rates were achieved by Luxembourg, Germany, Austria, the UK, Denmark, Finland. Whereas the relatively lowest rates belonged to Croatia, Bulgaria, Slovakia and Hungary, 30-40% below the EU average. Poland ranked in the group of countries (the Czech Republic, Greece, Slovenia, Estonia, Latvia, Poland), with the rates from 15 to 29% below the EU average. Over the 2016–2019, AIC per capita relative to the EU average remained relatively stable in a majority of Members States. However, a clear increase was registered in Romania (79% of the EU average in 2019 compared with 65% in 2016) followed by Lithuania (92% vs 85%), Slovenia (83% vs 77%) and Bulgaria (58% vs 54%). In contrast, the most noticeable decrease was recorded in Sweden (109% in 2019 vs. 112% in 2016), Austria (118% vs. 119%), Sweden (109% vs.112%) (Eurostat Newsrelease 188/2019, 181/2020).

It is worth to mention that in analysed period it is observed on one hand the stabilization of AIC and GDP in developed EU countries and on the other hand, the increase of them in

developing countries. It shows the slowly improving the material welfare of households in the post-communist countries

It is worth to underline that the effects accompanying the increased economic growth rate in Poland result from the integration with the European Union. The Polish accession to the EU enabled the development and modernisation of the economy due to increased investment size, new technologies, facilitated access to the markets of other member states, greater scale and specialisation of production, improved quality and effectiveness of management.

Table 5. Actual Individual Consumption and GDP in EU in 2016 and 2019 (EU-28 = 100), real prices

	AIC per capita		**GDP per capita**	
	2016	**2019**	**2016**	**2019**
EU	**100**		**100**	
Luxembourg	135	135	269	260
Germany	121	122	123	120
Austria	119	118	128	126
United Kingdom	115	113	108	104
Denmark	113	116	127	130
Finland	114	113	110	111
Belgium	114	114	119	118
France	110	109	105	106
Netherlands	111	114	127	128
Sweden	112	109	123	119
Ireland	95	95	176	193
Italy	98	99	97	96
Cyprus	92	95	87	90
Spain	90	91	91	91
Lithuania	85	92	75	84
Portugal	82	86	77	79
Malta	78	85	95	100
Czech Republic	79	85	88	93
Greece	77	78	68	67
Slovakia	68	69	77	73
Poland	74	79	68	73
Slovenia	77	83	83	89
Estonia	72	76	76	84
Latvia	66	71	64	69
Hungary	62	67	68	73
Romania	65	79	59	65
Croatia	61	66	60	65
Bulgaria	54	58	49	53

Source: own elaboration based on: (Eurostat Newsrelease 188/2019, 181/2020).

2.1.4. Tendencies in consumer's food expenditures in Eastern European countries

The study covered the period 2010–2019 on the base of Eurostat data. In the first stage of analysis, trends in total and food expenditures of chosen European countries were presented. In the next stage, we followed the share of food expenditures in total consumption of households in analysed period.

When we follow the tendency in total expenditures in chosen European countries in 2010–2019, it can be observed the two tendencies. On the one hand, in the countries with relatively low level of standard of living (Lithuania, Latvia) total expenditures increased in analysed period. On the other hand, we observed the tendency of decreasing or stabilization in developed EU countries (Table 6). At the same time there is observed the increase in food expenditures in 2010–2019. The highest increase is noted in Romania, Estonia. When we follow the rate of change in total and food expenditures in 2010-2019, the relatively low rate of increase is typical for developed EU countries: Germany, Luxembourg, Belgium and for developing Eastern Europe countries (by about 4–5% in analysed period). In Belgium in analysed period was observed big decrease in total expenditures and relatively low increase in food expenditures. At the same time it is observed the rapid increase in the total expenditures in Slovenia and Slovakia (by about 11–13% in analysed period).

Table 6. Tendencies in consumer's expenditures in chosen EU countries in 2010–2019

Countries	**Rate of change**	
	Total expenditures	**Food expenditures**
Belgium	0.84	1.03
Germany	1.03	1.03
Luxembourg	1.04	1.03
Bulgaria	1.04	1.04
Estonia	1.06	1.06
Latvia	1.06	1.04
Lithuania	1.06	1.04
Hungary	1.03	1.04
Poland	1.04	1.02
Romania	1.06	1.06
Slovenia	1.11	1.02
Slovakia	1.13	1.05
Czech	1.03	1.05

Source: Own elaboration based on: (Eurostat).

Standard of living of inhabitants ups to their purchasing power. When we follow the share of expenditures for food in overall expenditures of households in 2010–2019, it is observed the following tendencies of changes: decreasing in food expenditures in chosen countries, stabilization or increasing**,** differential part of food expenditures in total . When we follow the share of expenditures for food in overall expenditures of households in 2010–2019, it can be noticed that the group of countries with the lowest share of food expenditures in total expenditures are Austria, Ireland, United Kingdom, Netherlands, Germany, Sweden, Denmark, Luxembourg (respectively between 7.3 and 9.5%). Relatively high level of food expenditures is characterized for developing countries: Estonia, Lithuania, Latvia, Bulgaria, which follow situation from 2005–2013 (Eurostat Newsrelease 188/2019). The countries with a medium share of expenditures on food to total expenditures (between 10 and 15%) include Czech Republic, Hungary, Romania, Slovakia and Poland (Table 7).

In the next analysed period (2016–2019), it can be noticed that the group of countries with the lowest share of food expenditures (near the EU developed countries) in total expenditures are Slovakia, Slovenia, Romania (respectively between 7.0 and 11.0%). Relatively high level of food expenditures (between 16 and 20% in total expenditures) is characterized for developing Eastern European countries: Lithuania, Estonia, Bulgaria and Latvia which follow situation from 2005–2013. (Eurostat Newsrelease 188/2019). The countries with a medium share of expenditures on food to total expenditures (between 14 and 15%) include Czech Republic, Hungary, Poland. In the last years we observed the tendency of decreasing the level of food expenditures in total expenditures in these countries. The relatively lowest level of food expenditures – between 5.8 and 6.7% is characterized for Slovakia and also for Slovenia in 2014–2018. In 2019 this situation was completely changed and we observed rapid increase in food expenditures in these countries.

Generally we observed the tendency of decreasing the share of expenditures for food in total in the 2016–2019 (Table 7). This situation describe standard of living and purchasing power of inhabitants. We can observed the slowly decreasing in differences in standard of living between developed and developing countries (Eurostat 2019). Engel's law holds that in countries characterized by a relatively high standard of living, food expenditures as a share of overall expenditures is rather low. Therefore, an obvious indicator of rising affluence of the inhabitants of the EU – as elsewhere – is a decrease observed in the share of food expenditures in total expenditures. This applies to Poland as well, thought it still spends more of its income on food than do more developed EU countries.

Table 7. Share of food expenditures in total consumption of households in 2010–2019 in % (EU-28 = 100), current prices

Countries	Years									
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
EU-28	11.1	11.1	11.1	11.2	11.1	11.0	11.0	11.0	11.0	×
Bulgaria	16.8	16.4	15.9	15.9	17.6	17.8	x17.	17.6	17.5	16.8
Czech Republic	12.4	12.9	13.6	13.9	14.4	14.3	14.2	14.1	13.7	14.0
Estonia	18.2	18.3	18.0	18.6	19.2	18.9	18.5	18.4	18.0	17.7
Croatia	16.2	15.8	15.9	15.9	16.2	16.0	15.9	16.0	15.7	15.6
Latvia	18.8	18.3	18.1	18.0	17.7	16.6	16.2	16.0	16.5	16.4
Lithuania	22.4	22.4	22.4	22.1	21.5	21.2	20.1	20.4	19.4	18.7
Hungary	14.3	14.6	14.8	15.3	15.3	15.4	15.0	15.2	15.0	14.8
Poland	17.3	16.6	16.3	16.3	15.6	15.2	15.4	15.2	14.7	14.9
Romania	25.3	25.7	27.3	26.8	10.7	10.7	×	11.7	12.3	12.5
Slovenia	12.9	13.3	13.7	13.7	7.1	7.0	×	6.6	6.4	15.9
Slovakia	14.5	14.4	15.2	15.2	5.7	5.8	5.9	6.3	6.7	10.3

× – data not available

Source: (Eurostat).

2.1.5. A subjective evaluation of household income situation

An important supplement to the analysis regarding the share of food expenditures in households total consumption expenditures constitutes the subjective evaluation of the income condition of household. It has been carried out in 2013–2019. The results of analysis for Eastern European countries show that generally trend, households located in countries with a high standard of living assess their income condition as much better than those in developing countries. On the base of the research in 2013, we observed significant differentiation in the distribution of the respondents answers. Approximately 3–5% of declarations provided by households from Austria, Germany, fell in the "make ends meet with great difficulty" range – Table 5. This situation changed in 2019, when these declarations increased both in developed and developing countries. It has been noticed increase of estimation income situation by two times in Austria, France and three times in Germany and Luxembourg. Relatively stable situation is observed in Belgium, when respondents declarations in analysed period are very close, between 8.8.to 9.9 % (Table 8).

Table 8. The subjective evaluation of household income situation in 2013 and 2019 (percentage terms)

Households which declared "to make ends meet with great difficulty"		
Countries	**2013**	**2019**
Austria	5.4	10.5
Belgium	8.8	9.9
Czech Republic	9.1	9.8
Estonia	7.5	8.5
France	4.5	10.2
Germany	3.0	9.0
Hungary	26.7	9.7
Latvia	25.4	×
Lithuania	9.6	6.4
Luxembourg	4.4	11.9
Netherlands	3.8	10.6
Poland	12.7	9.4

× – data not available
Source: (Eurostat).

The tendency of subjective evaluation of household income situation is similar in Eastern European countries in 2013–2019. Estonia, Czech Republic, Lithuania, Poland, Latvia, Hungary, where the share of "with great difficulty" in 2013, the share fluctuated within the range from 7.5 to 26.7%. Moreover, there is considerable differentiation here too. The relatively highest share of the "make ends meet with great difficulty" responses occurred in countries with relatively low growth in disposable income over the analysed period. In the next analysed 2019 year the situation changed, relatively improved in Hungary, Lithuania. We observe decreasing of the respondents declarations by about three times in Hungary, 50% in Lithuania and by about 25% in Poland. In the remaining Eastern European countries: Czech Republic and Estonia there is observed a little increase: respectively by about 0.7 and 1% in analysed period. The results of this subjective analysis shows that in some Eastern European countries the poverty zone decreased in 2013–2019 years. There is a clear connection between the level of a country's economic development and the consumption model.

2.2. The level of satisfaction of nutritional needs in Poland in 2003–2019

2.2.1. Research methodology

2.2.1.1. Econometric analysis methods

Econometric methods are of quantitative character and they make it possible to conduct analyses on a wide spectrum basing on assessment indicators. The indicators consist of parameters estimated basing on different demand models as well as income elasticity factors determining the force of reaction of demand to the change in consumers' income level. The econometric model the most frequently used for estimating the parameters of food consumption function is the log-hyperbolic model in which the estimated A parameter sets the asymptote, constituting in economic interpretation the level of consumption saturation provided that the income is growing without any limits. Pioneering significance have works by Zielińska (1978). These works were based on empirical analysis of the workers' budgets. Saturation level was determined for 10 nutrition groups as well as comparative analysis was performed for the dynamics of changes in the years 1966–1976. As far as the food market is concerned, the regularities, formulated by Keynes and Engel, referring to the specific expenditure trends consisting in a change in the general relations in consumption expenditure and savings as well as the change in the structure of expenditure have been confirmed many times. Studies verifying the above-mentioned Engel's law are of interest to many scientists, and this tendency has been reflected in numerous Polish and foreign scientific publications (Klonaris 2001, Kwasek 2008, Kehlbacher 2012, Kwasek 2015, Szwacka-Mokrzycka 2018).The presented methodology constituted the basis for further studies created basing on the data from household budgets (Szwacka-Salmonowicz and Zielińska 1996, Szwacka-Salmonowicz 2003, Kwasek 2008, 2012, 2015). The evaluated elasticity factors constituted factual basis for performing quality and quantity assessment of consumption structure expressed in a qualitative and quantitative way as well as for the assessment of the pace of the consumption of different nutrient groups approaching the saturation level. The evaluated elasticity factors were used for determining the hierarchy of nutritional needs in different household types in Poland.

In the present study the level of satisfaction of nutritional needs have been determined basing on the results of food consumption elasticity in the household perspective. The source of information for conducting this research was the data from household budgets by Central Statistical Office GUS. The analysis included the years 2003–2019, which made it possible to

capture the dynamics of changes in the structure of nutritional needs of Polish households. Comparative analysis of nutritional needs in the year 2019 was performed basing on the modifications shaped in the year 2003.

As far as the method of presenting research results is concerned, it follows the pattern ensuring the comparability of data. All materials were arranged according to the criterion of the value of income elasticity factors for food consumption. Presented factors constitute average values, obtained in the profile of quintile groups in the studied households. At present, Central Statistical Office GUS makes available the information on the diversity of income, expenses and consumption according to quintile groups exclusively for the total of households in Poland, employees and pensioners, while for the remaining social groups, i.e. farmers, the self-employed or people living on unearned income, this data is not provided. For this reason, presented research results, starting from the year 2003, are of narrowed character due to limited accessibility of data. What is more, when it comes to the subject-related scope of the analysis, the present study concentrates on product categories without taking into account subsequent items included in them. Nutritional products, exclusive of stimulants, were the only categories taken into account, which constituted the subject of analyses in the previous years. Data concerning the income and consumption is presented according to its division into five quintile groups with demographical and social characteristics of the people forming a given household as well as the level of monthly income and expenses taken into account. Such division makes it possible to compare the distribution of income in the profile of the wealth level (starting from the poorest 20% – first quintile group, and finishing with 20% of the wealthiest households) taking into account two already mentioned household types, i.e. employees and pensioners.

Prioritization of nutritional needs was performed basing on the analysis and assessment of average income elasticity factors for consumption in the profile of the following groups: general household wealth, employees as well as pensioners. Starting point consisted in dividing the expenses for nutritional products into three groups according to the assessment criterion of income elasticity factors adopted in previous studies. The first group of expenses, including the values of elasticity factors 1.0 and above 1.0 corresponds to satisfying the needs for luxury goods. The next product group includes products with average level of income elasticity factors for expenses below 1.0 to 0.5. They were called basic products. The third group, including products satisfying lower-order needs, included the products characterized by relatively lowest level of income elasticity factors for consumption, i.e. below 0.5.

According to the performed analysis, among the estimated income elasticity factors for consumption, high and very high ones, i.e. those at the level of 1 and above, are absent. It

probably results from accepting for analysis a more restricted product portfolio and in majority in the perspective of a category and not subsequent products, as it was the case in the years 1996–2001. What is more, within the years 2000s, the trend consisting in the reduction of average consumption elasticity factors has been observed, which opts for the growing level of satisfying nutritional needs. The studies carried out so far have confirmed the adequacy of the logarithmic-hyperbolic model for establishing a hierarchy and general assessment of the direction of changes related to food consumption needs in 2003–2019.

2.2.1.2. Panel regression methodology

The modelling procedure of panel regression described in this part of the book was carried out taking into account the cross-section of individual types of households and product categories. The following types of households were considered: total, employees, pensioners. Product categories included: bread and cereals, cakes and bakery products, meat, fish, milk, yoghurts and dairy drinks, cheese, oils and other vegetable fats, animal fats, fruit, vegetables, confectionery products, juices. The Central Statistical Office surveys of the household budgets covering the period of 2003–2019 were the source of information used for the panel analysis contained in this work.

As it has been mentioned above, at present, the methods which are most frequently applied to examine the rate of development of food consumption and changes occurring with regard to its structure are those which belong to the category of econometric analyses. The studies to date, carried out for many years, have focused on the substantive analysis of the development processes of food consumption, and they were mainly related to the assessment of the adequacy of various econometric models to describe the empirical processes of food consumption development in Poland.

When assessing the degree of satisfaction of basic food needs, we may observe the occurrence of Engel's regularity. At the same time, the research confirmed that the income elasticity coefficients of demand are the basic measures for assessing the level of consumers' meeting their food needs, the scope of qualitative changes and the degree of substitution within individual product categories.

Subsequent studies have pointed to the importance of econometric models estimated on the basis of panel data in order to identify unobservable factors. This method creates a possibility to apply them in the analysis of critical economic problems. It is important to point out that Islam (1995) is of pivotal importance in terms of using panel data to estimate a dynamic

growth model. When we consider the use of the dynamic panel model in the area of microeconomic research, the dynamic specification of Cobb-Douglas production function, played a significant role in the development of the research in this area (Blundell and Bond 2000).

There have been presented the relevance of the use of panel regression models in food consumption research based on panel data obtained from the statistics of the Household Budgets. The use of panel data in modelling food consumption constitutes its new application (Szwacka-Mokrzycka 2018, 2020). In this study, the author used panel models for econometric modelling of the consumption of selected food products. This work is a continuation of the panel research initiated in 2017. The correctness of the findings has been confirmed for the models with fixed individual effects.

Panel studies have many advantages. They allow for conducting analyses both in terms of micro- and macro-consumption. Micro panels are conducted to cover the situations of individual households, while macro panels can cover a selected sector of the economy. A typical example of a micro panel is data obtained from households. In turn, macro panels are usually characterised by a limited number of cross-sectional observations and a longer time span of the sample. Typically, this is data used in macroeconomic research. Panel studies provide the opportunity to increase the data set and thus expand the analysis. They allow identifying the causes of the phenomena examined in the study, observing the dynamics of these phenomena, as well as controlling unobservable individual effects in regression models. The term "panel data" refers to data sets that contain information about the same objects (cross-sectional information) in several periods in time (Maddala 2001). Dańska-Borsiak (2009) is considering panel data to be a specific type of cross-sectional data. In this case, the number of T periods is much smaller than the n number of objects. Literature studies (Baltagi 2013) confirm the advantage of panel data analysis over the analysis of cross-sectional data sets or several cross-sectional data sets containing unique, single-reference objects. Its advantage consists in observing units in subsequent periods. Data analysis carried out in this way allows reducing measurement errors and problems that result from omitting unobservable variables or variables correlated with the explanatory variable in the constructed model (Osińska 2007). Two approaches to modelling cross-sectional dependence in economic panel data are often used: the spatial dependence approach, which explains cross-sectional dependence, in terms of distance among units, and the residual multifactor approach, which explains cross-sectional dependence by common factors that affect individuals to a different extent. Many researchers wrote about the use of panel data in various analyses, e.g. Wooldrige (2001), Hsiao (2003), Dańska and Laskowska (2011), Biørn

(2016). Special attention is paid to the theory and estimation and statistical inference for stationary and nonstationary panel data with cross-sectional dependence, particularly for models with a multifactor error structure (Bruno 2004, Karabiyik et al. 2019). In addition, conducting this type of analysis enables the authors to identify the causes of certain phenomena.

Panel models can be divided into two types. The first is a balanced panel, i.e. a set of data, where all information from each year of the examined period is available for each object. If the data set has deficiencies in observations, then the panel is unbalanced (Dańska-Borsiak 2009). The easiest way to estimate panel data is to use the classical least squares method (CLS). The consequence of using this method is that the specific structure of this data is not taken into account. The estimation of the sample using this method does not take into account the division of observations by a unit of time and cross-section. In such a case, there is no division of observations, and they are all mixed. The model estimated in such a way is called the simple regression model or the pooled regression model. The condition for this model to be correct is the lack of correlation between the individual effect and the explanatory variable. The estimation of model parameters is considered acceptable if the model lacks an individual effect. The panel is then considered a cross-sectional data set.

Another model, the Fixed Effects Model (FEM), assumes that there are differences between the objects. They are included in the constant term. Consequently, the constant term occurring in the model is different for each examined object and constant over time. When estimating the parameters of the model with fixed effects, zero-one variables are used. Then each of the binary variables represents the *i*-th object. When estimating the FE estimator, intra-group diversity is used. Consequently, the fixed effects estimator is also called *within estimator*. Estimating model parameters in this way can be challenging or troublesome if the explanatory variable does not change over time. In such a case, one cannot determine the effect of the independent variable on the dependent variable.

Another method of analysing panel data is the Random Effects Model (REM). In this model, the estimated parameters with explanatory variables are treated as variable coefficients, not as constants, as in the case of the FEM model. The REM model is used where differences between objects can be represented by different constants (Madala 2001). In particular, when the cross-sectional units are randomly selected from among the population, then it is assumed that the individual effect is carried out by a random variable. The model with random effects is also called the variance component model.

2.2.2. Results of food consumption elasticity in the households

The performed analysis concerning the shaping of nutritional needs of Polish households makes it possible to select three basic change directions. This concerns the level of satisfying the needs, quality changes as well as substitution processes within the analysed groups of nutritional products.

By assessing the level of satisfaction for nutritional needs in the year 2015 in comparison with the year 2003, visible decrease in income elasticity factors for food consumption should be noticed, while the essence of prioritization remained unchanged (Tables 9,10,11). In the years 2003–2015, the prioritization concerned only basic and absolutely basic products as the transition to the second group took place for those products which up to that point represented the luxury group and still in the 1990s were characterized by high, i.e. exceeding 1.0, level of income elasticity factors for expenses and consumption (Szwacka-Salmonowicz 2003).

Table 9. Prioritization of food consumption according to high elasticity factors in the year 2003

Specification	**Values of factors**	
	from	to
Group II – elasticity factors from 0.5 to 1		
Juice (total)	0.84	0.97
Yoghurts and milk drinks	0.55	0.67
Pastries	0.44	0.64
Fish	0.39	0.56
Sweets	0.43	0.51
Fruits (total)	0.38	0.54
Group III – elasticity factors below 0.5		
Cheese (total)	0.40	0.44
Animal fats	0.23	0.34
Meat (total)	0.15	0.26
Oils and other plant fats	0.05	0.22
Vegetables (total)	0.04	0.19
Milk	–0.01	0.14
Bread and cereal products	–0.02	0.09

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Table 10. Prioritization of food consumption according to high elasticity factors in the year 2009

Specification	**Values of factors**	
	from	to
Group II – elasticity factors from 0.5 to 1		
Juice (total)	0.56	0.84
Yoghurts and milk drinks	0.50	0.63
Pastries	0.43	0.57
Fish	0.39	0.57
Sweets	0.40	0.52
Fruits (total)	0.38	0.59
Group III – elasticity factors below 0.5		
Cheese (total)	0.40	0.47
Animal fats	0.31	0.41
Meat (total)	0.15	0.26
Oils and other plant fats	0.06	0.21
Vegetables (total)	0.05	0.21
Milk	–0.01	0.07
Bread and cereal products	0.00	0.07

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Table 11. Prioritization of food consumption according to high elasticity factors in the year 2015

Specification	**Values of factors**	
	from	to
Group II – elasticity factors from 0.5 to 1		
Juice (total)	0.53	0.84
Yoghurts and milk drinks	0.23	0.59
Pastries	0.43	0.57
Fish	0.39	0.61
Sweets	0.30	0.45
Fruits (in total)	0.38	0.68
Animal fats	0.38	0.56
Group III – elasticity factors below 0.5		
Cheese (total)	0.43	0.47
Meat (total)	0.13	0.24
Oils and other plant fats	0.06	0.21
Vegetables (total)	0.07	0.20
Milk	0.01	0.14
Bread and cereal products	0.04	0.10

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

It has been important from the point of view of the conducted analysis to refer to empirical verification of Engel's law. Basing on Engel's factors, constituting the relation of expenditures on food to the total of expenditures, the society's standard of living is assessed. The relatively lower the mentioned factor, the higher the standard of living of the studied social

group. High share of expenditures on food in the total of expenditures, in turn, points out to unfavourable economic situation of a given social group. Studies verifying Engel's law constitute the subject of interest of numerous scientists and they have been reflected in many different Polish and foreign studies (Zielińska 1978, Deaton 1998, Szwacka-Salmonowicz 2003, Janoś-Kresło and Mróz 2006, Kwasek 2015, Szwacka-Mokrzycka 2016, 2017).

While performing the assessment concerning the level of satisfaction of nutritional needs in the first and second decade of the 21st century it should be stated that the decrease in consumption elasticity factors took place in each of the analysed groups, while the scope of this decrease is diversified. Relatively most important decrease of factors in the analysed period took place in the consumption group corresponding to satisfying lower-order needs (Szwacka-Mokrzycka 2018). When we follow the prioritization of food consumption according to high elasticity factors in the year 2019, it is observed the similar tendency as in 2015. It has been confirmed the positioning of product categories in second group (with elasticity factors between 0.5 to 1.0). In 2019 there were situated: fish in total, yoghurts and dairy products, confectionery, cheese, juices, cakes and bakery and fruit in total (Table 12). It is observed the tendency of relatively decrease of income elasticity factors in 2019 in relation to 2015 for: juices in total, fruit in total, meat in total, vegetables in total (Table 12). At the same time the tendency of increase income elasticity factors for fish in total, yoghurts and dairy products, cheese (by about 1.5–3 times) is noticed. It is worth to mention that the decrease of income elasticity factors touched mainly food products situated in III group with elasticity factors below 0.5. The relatively highest decrease, by about three times, is observed in elasticity factors for meet (from 0.13 in 2015 to 0.04 in 2019). On the base of conducted analysis we can confirm the continuation of the tendency of substitution processes within nutritional products groups in 2019. At the same time it is worth to underline the relatively high and increasing in 2019 elasticity factors for fish, yoghurts and dairy products. It shows relatively low level of satisfying needs for these products.

Summing up the change direction could be noticed for income elasticity factors for food consumption for product groups. The noticed regularity, expressed in relative decrease in the level of income elasticity factors for nutritional products, constitutes the expression of changes that nutritional needs have undergone over the last dozen years. What is more, it proves the growing level of satisfaction of nutritional needs starting from the 1990s. What should also be pointed out it is the lasting diversification of household behaviours still in 2019.

These differences include on one hand the households of employees and on the other, of pensioners. In the first household group, relatively low elasticity factors were observed in the years 2003–2019, while in the second group, relatively high income elasticity factors for consumption were noticed. The diversification of food consumption patterns in presented household is no longer as important as in the 1990s, but it would be difficult to support the thesis on consumption patterns of the households of employees and pensioners getting gradually closer to one another.

Table 12. Prioritization of food consumption according to high elasticity factors in the year 2019

Specification	**Values of factors**	
	from	to
Group II – elasticity factors from 0.5 to 1		
Juice (total)	0.55	0.65
Yoghurts and milk drinks	0.73	0.82
Cakes and bakery products	0.48	0.58
Fish	0.87	0.95
Confectionery	0.67	0.79
Fruits (total)	0.38	0.59
Cheese (total)	0.67	0.70
Group III – elasticity factors below 0.5		
Animal fats	0.31	0.41
Meat (total)	0.04	0.06
Oils and other plant fats	0.17	0.23
Vegetables (total)	0.06	0.08
Milk	0.02	0.03
Bread and cereal products	0.04	0.05

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Summing up the change direction could be noticed for income elasticity factors for food consumption for product groups. The noticed regularity, expressed in relative decrease in the level of income elasticity factors for nutritional products, constitutes the expression of changes that nutritional needs have undergone over the last dozen years. What is more, it proves the growing level of satisfaction of nutritional needs starting from the 1990s. What should also be pointed out it is the lasting diversification of household behaviours still in 2019. These differences include on one hand the households of employees and on the other, of pensioners. In the first household group, relatively low elasticity factors were observed in the

years 2003–2019, while in the second group, relatively high income elasticity factors for consumption were noticed. The diversification of food consumption patterns in presented household is no longer as important as in the 1990s, but it would be difficult to support the thesis on consumption patterns of the households of employees and pensioners getting gradually closer to one another.

The second trend in the analysed period points out to quality changes in food consumption. They have been estimated basing on the elasticity of quality defining the differences between income elasticity factors for expenses and consumption in subsequent product groups. The largest discrepancies were observed in relation to absolutely basic products. For some products in the third group, high differences between income elasticity factors for expenses and consumption were observed (Szwacka-Mokrzycka 2018). These differences decrease over the years, but quality elasticity for some products still remains at a relatively high level. By saying this I refer to such categories as: oils and other plant fats, cereal products, milk, meat, sweets. For these categories, the increase in quality elasticity factors was observed in the second decade of the 21st century. This proves the dynamization of quality changes over the last years in this product group, where substantial changes concerning the increasing of quality parameters are observed. When it comes to products forming group II, as it results from the performed analysis, quality has a fixed position, and for this reason the scale of changes is much lower than in the group of products satisfying lower-order needs. The analysis of quality changes according to the profile of households shows that different meaning is attributed to the quality of nutritional products consumed in the households of employees than of pensioners. In the first group visible quality changes in food consumption have appeared, which is reflected in high discrepancies between income elasticity for expenses and the consumption of nutritional products. In the households of pensioners, in turn, the quality of nutritional products purchased is of much lower importance.

It is confirmed by significantly lower quality elasticity factors. Quality changes result in particular from the transformations in consumers' consciousness. They are expressed in the change of eating habits, and as a result in the transformation of the preference scheme. The changes in consumption model are also promoted by consumer education stimulating the shaping of models based on the rationalization of food consumption. The results obtained for the years 2003–2015 repeat the trend emerged in the 1990s.

Moreover, the analysis of the changes in nutritional needs demonstrates that quality changes result to a large extent from the intensification of substitution processes between nu-

tritional products groups. It is reflected in relative decrease in income elasticity factors for expenses and consumption. Relative decrease of income elasticity factors for food results on one hand from the ongoing substitution processes between food and other consumer goods and on the other – from those within nutritional products groups. This distribution manifests itself in the shift of many nutritional products from group II (basic products) to group III (lower-order needs). What is more, the regrouping of some categories took place within the groups. It refers in particular to such products as animal and plant fats, milk, bread and cereal products, for which over the years 2000s, the substitution effect became clearly marked. The conducted analysis of changes in nutritional needs in Polish households shows the continuation of the trend which emerged within the period of transformation of Polish economy.

2.2.3. Panel regression models in food consumption research

The study covered the years 2003, 2009, 2015 and 2019. During the study, the authors used the data from the research into the household budgets provided by the CSO. The analysed data form a balanced panel. Panel models were used for econometric modelling of the consumption of selected food products. The author has undertaken the task of building all the presented models for panel data; however, during the research, it turned out that the correct models are those with fixed individual effects. The presented study depicts panels for households in total, employees and pensioners in the analysed period of 2003–2019.

Based on the analysis of panel data for households in total, three categories of models were created. They include the estimated model of the classical least squares (CLS) method, the model with fixed effects (FEM model) and the model with random effects (REM model). The next step of panel research was the stage of statistical verification, which enabled the author to make the final decision regarding the choice of the correct model. At this stage of the study, the author used the tests described above. Table 13 presents the results of the tests for households in total, together with the final decision on the choice of the model applied in the study. The categories of products where it is justified to assign individual effects for each of the quintile groups are indicated in a bolded font. In turn, The final stage of the analyses of product consumption for panel data was the presentation and interpretation of established individual effects for selected product categories.

In households, the total consumption of six of the analysed food products is not differentiated according to the quintile group. These are bread and cereals, cakes and bakery products, meat, yoghurt, confectionery and juices. The statistical verification carried out for these product

categories suggests that the use of a model with random effects (REM model) would be a viable solution. It is not possible to interpret individual effects for these product categories.

After analysing the panels of each of the presented product categories using the Wald test, it emerges that individual effects should be considered in the study. However, only for some of the product categories, these effects are fixed and can be interpreted. Moreover, due to the change of consumption patterns among the Polish population (higher level of meeting their needs with regard to food products), which is reflected in the consumers' behaviour towards certain products, such as: cakes and bakery products, meat, yoghurt and dairy drinks, confectionery and partially milk and juices, the fixed individual effects cannot be determined.

Table 13. Statistical verification and adopted panel models – households in total

Product	**Test Walda**	**Test Breuch – Pagan test**	**Test Hausman test**	**Selection of the model**
Bread and cereals	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Cakes and bakery products	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Meat (in total)	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Fish (in total)	we reject H0	we reject H0	we reject H0	FEM model
Milk	we reject H0	we reject H0	we reject H0	FEM model
Yoghurts and dairy drinks	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Cheese (in total)	we reject H0	we reject H0	we reject H0	FEM model
Oils and other vegetable fats	we reject H0	we reject H0	we reject	FEM model
Animal fats	we reject H0	we reject H0	we reject H0	FEM model
Fruit (in total)	we reject H0	we reject H0	we reject H0	FEM model
Vegetables (in total)	we reject H0	we reject H0	we reject H0	FEM model
Confectionery products	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Juices (in total)	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Subsequently, the author calculated the predicted (average) level of consumption of the examined food products in the analysed period. The results of these calculations are presented in Table 14. The greatest diversity in the area of consumer behaviour can be observed for the product categories including fruit, vegetables, meat and juices. In turn, the smallest (expected) differences in consumer behaviour occur for the categories of milk, confectionery, oils and other vegetable fats and fish in total.

Table 14. The expected (average) level of consumption of selected food products for households in total

Food product	**Quintile group**				
	first	second	third	fourth	fifth
Bread and cereals	6.62	6.66	6.90	7.09	7.01
Cakes and bakery products	0.51	0.62	0.73	0.86	1.03
Meat (in total)	4.56	4.99	5.47	5.88	5.93
Fish (in total)	0.23	0.29	0.36	0.44	0.53
Milk	3.52	3.52	3.63	3.74	3.62
Yoghurts and dairy products	0.29	0.37	0.44	0.53	0.70
Cheese (in total)	0.61	0.72	0.85	1.00	1.24
Oils and other vegetable fats	1.15	1.23	1.33	1.41	1.37
Animal fats	0.30	0.36	0.44	0.52	0.55
Fruit (in total)	2.44	2.97	3.58	4.37	5.52
Vegetables (in total)	8.73	9.24	9.82	10.57	10.67
Confectionery	0.49	0.52	0.57	0.60	0.65
Juicess (in total)	0.55	0.76	0.93	1.12	1.64

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

In the next stage of research, individual effects were determined for selected food products for each of the quintile groups – as presented in Table 15. The individual effects which are relevant from the point of view of the interpretation of the findings are marked in the bolded text. If we treat the constant term as the expected consumption of a selected product category, then, as can be seen based on the presented data, the individual effects describe the consumption of these products in relation to the predicted level (Table 15). In other words, individual effects represent differences in consumption between individual quintile groups. Due to the lack of established individual effects it is not possible to interpret all the presented parameters. When examining the cross-section of households in total in the category of vegetables, considering

the analysed period, the largest individual consumption effects were recorded for the first quintile group. The volume of the vegetables consumption in this group was 20.96 kilograms higher than the expected volume of vegetables consumption, which, for this quintile group, was estimated at the level of 8.73 kilogram. In subsequent groups one can observe a systematic decrease in the individual effects of consumption in this category by quintile group (Table 15). A similar pattern can be observed in the category of fruit, milk, oils and other vegetable fats. In the category referring to fish (in total), the first quintile group recorded the consumption level which was higher than expected by 2.23 kilogram. In contrast, in other groups, the findings indicate that consumption is at a lower level than it was predicted. For animal fats, cheeses and fish, in the following quintile groups, the values are lower than expected consumption levels by 0.68 for animal fats, 0.67 for cheese, 0.59 for fish, 3.31 for milk and 3.55 kilogram fruit respectively, in fifth quintile group (Table 15).

Table 15. Individual effects for selected food products for households of total

Food product	**Quintile group**				
	first	second	third	fourth	fifth
Fish (in total)	2.23	–0.10	–0.21	–0.33	–0.59
Milk	7.16	–0.36	–0.90	–1.58	–3.31
Cheese (in total)	2.44	–0.12	–0.25	–0.41	–0.67
Oils and other vegetable fats	3.43	–0.19	–0.41	–0.66	–1.17
Animal fats	2.44	–0.11	–0.25	–0.40	–0.68
Fruit (in total)	8.52	–0.59	–1.26	–2.13	–3.55
Vegetables (in total)	20.96	–1.43	–3.13	–5.29	–10.11

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

In households of employees, the consumption of four of the analysed food products is not differentiated according to the quintile group. These are bread and cereals, cakes and bakery products, milk, yoghurt and dairy drinks, confectionery and juices. The statistical verification carried out for these product categories suggests that the use of a model with random effects (REM model) would be a viable solution. It is not possible to interpret individual effects for these product categories (Table 16).

After analysing the panels of each of the presented product categories using the Wald test, it emerges that individual effects should be considered in the study. However, only for some of the product categories, these effects are fixed and can be interpreted. The fixed individual effects can be determined for: meat, fish, cheese, oils and other vegetable fats, juices,

fruit, vegetables. For these categories we still observe in households of employees relatively low level of meeting their needs. In households of employees the consumption of five of the analysed food products is not differentiated according to the quintile group. These are bread and cereals, cakes and bakery, milk, confectionery, yoghurts and dairy drinks (Table 17).

Table 16. Statistical verification and adopted panel models – households of employees

Product	**Test Walda**	**Test Breuch –Pagan test**	**Test Hausman test**	**Selection of the model**
Bread and cereals	no grounds for rejection of H0	we reject H0	we reject H0	REM model
Cakes and bakery products	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Meat (in total)	we reject H0	we reject H0	we reject H0	FEM model
Fish (in total)	we reject H0	we reject H0	we reject H0	FEM model
Milk	no grounds for rejection of H0	we reject H0	we reject H0	REM model
Yoghurts and dairy drinks	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Cheese (in total)	we reject H0	we reject H0	we reject H0	FEM model
Oils and other vegetable fats	we reject H0	we reject H0	we reject H0	FEM model
Animal fats	we reject H0	we reject H0	we reject H0	FEM model
Fruit (in total)	we reject H0	we reject H0	we reject H0	FEM model
Vegetables (in total)	we reject H0	we reject H0	we reject H0	FEM model
Confectionery products	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Juices (in total)	we reject H0	we reject H0	we reject H0	FEM model

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Subsequently, the predicted (average) level of consumption of the examined food products in the analysed period was calculated. The greatest diversity in the area of consumer behaviour can be observed for the product categories including fruit and juices. In turn, the smallest (expected) differences in consumer behaviour can be observed for the categories of bread and cereals, milk, oils and other vegetable fats, confectionery. Individual effects estimated for fruit and juices represent great differences in consumption between individual quintile groups.

When examining the cross-section of households of employees in the category of fruit, considering the analysed period, the largest individual consumption effects were recorded for the fifth quintile group. The volume of the fruit consumption in this group was 5.0 kilograms higher than the expected volume of fruit consumption, which, for this quintile group, was estimated at the level of 8.73 kilograms. In previous groups (from I to IV) one can observe a systematic decrease in the individual effects of consumption in this category by quintile group. A similar pattern can be observed in the category of juices. The volume of the juices consumption in this group was 2.52 kilograms higher than the expected volume of juices consumption, which, for this quintile group, was estimated at the level of 1.87 kilogram. For other categories in the following quintile groups, the values are close or a little lower than expected (Table 18).

Table 17. The expected (average) level of consumption of selected food products for households of employees

Food product	**Quintile group**				
	first	second	third	fourth	fifth
Bread and cereals	6.09	6.11	6.11	6.24	6.27
Cakes and bakery products	0.50	0.59	0.67	0.78	0.95
Meat (in total)	3.74	4.06	4.38	4.66	4.70
Fish (in total)	0.18	0.23	0.28	0.32	0.41
Milk	3.04	3.08	3.03	3.08	3.03
Yoghurts and dairy products	0.31	0.39	0.45	0.55	0.73
Cheese (in total)	0.59	0.70	0.80	0.94	1.21
Oils and other vegetable fats	1.06	1.11	1.16	1.19	1.17
Animal fats	0.26	0.30	0.36	0.40	0.45
Fruit (in total)	2.30	2.76	3.18	3.81	5.00
Vegetables (in total)	7.78	8.10	8.40	8.82	8.90
Confectionery	0.17	0.19	0.22	0.25	0.30
Juices (in total)	0.62	0.83	1.04	1.29	1.87

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Table 18. Individual effects for selected food products for households of employees

Food product	Quintile group				
	first	second	third	fourth	fifth
Meat (in total)	–0.54	–0.46	–0.37	–0.26	1.73
Fish (in total)	–0.84	–0.72	–0.60	–0.45	3.61
Cheese (in total)	–0.44	0.12	0.23	0.39	0.70
Oils and other vegetable fats	–0.83	0.14	0.29	0.47	0.93
Juices (in total)	–0.77	1.04	1.31	1.64	2.52
Fruit (in total)	–0.31	–0.26	–0.21	–0.14	1.01
Vegetables (in total)	–9.51	10.47	11.52	12.97	16.47

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Table 19. Statistical verification and adopted panel models – households of pensioners

Product	Test Walda	Test Breuch – Pagan test	Test Hausman test	Selection of the model
Bread and cereals	no grounds for rejection of H0	no grounds for rejection of H0	we reject H0	REM model
Cakes and bakery products	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Meat (in total)	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Fish (in total)	we reject H0	we reject H0	we reject H0	FEM model
Milk	we reject H0	no grounds for rejection of H0	we reject H0	REM model
Yoghurts and dairy drinks	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Cheese (in total)	we reject H0	no grounds for rejection of H0	we reject H0	REM model
Oils and other vegetable fats	we reject H0	we reject H0	we reject H0	FEM model
Animal fats	no grounds for rejection of H0	no grounds for rejection of H0	we reject H0	REM model
Fruit (in total)	we reject H0	we reject H0	we reject H0	FEM model
Vegetables (in total)	we reject H0	we reject H0	we reject H0	FEM model
Confectionery products	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model
Juices (in total)	we reject H0	no grounds for rejection of H0	no grounds for rejection of H0	REM model

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

In the households of pensioners the consumption of bread and cereals, cakes and bakery products, meat, milk, yoghurts and dairy drinks, cheese, animal fats, confectionery and juices

is not differentiated according to the quintile group. So that for these product categories the use of a model with random effects (REM model) would be a viable solution. It is not possible to interpret individual effects for mentioned above product categories. For some of the product categories (fish, oils and other vegetable fats, fruit, vegetables) fixed individual effects can be interpreted.

In the next stage of research the predicted (average) level of consumption of the examined food products in the analysed period was calculated. The greatest diversity in the area of consumer behaviour can be observed for the product categories including: fish, fruit, vegetables. On the other hand, the smallest (expected) differences in consumer behaviour occur for the categories of milk, oils and other vegetable fats, bread and cereals (Table 20).

Table 20. The expected (average) level of consumption of selected food products for households of pensioners

Food product	**Quintile group**				
	first	second	third	fourth	fifth
Bread and cereals	7.52	8.31	8.51	8.57	8.61
Cakes and bakery products	0.58	0.81	0.94	1.08	1.31
Meat (in total)	5.34	6.35	7.00	7.29	7.53
Fish (in total)	0.29	0.41	0.51	0.59	0.71
Milk	3.91	4.41	4.60	4.67	4.54
Yoghurts and dairy products	0.28	0.39	0.47	0.55	0.69
Cheese (in total)	0.69	0.88	1.02	1.18	1.39
Oils and other vegetable fats	1.37	1.64	1.78	1.83	1.85
Animal fats	0.40	0.55	0.64	0.72	0.78
Fruit (in total)	2.78	3.95	4.78	5.69	7.11
Vegetables (in total)	10.30	12.04	13.03	13.96	14.31
Confectionery	0.16	0.20	0.23	0.26	0.31
Juicess (in total)	0.47	0.63	0.75	0.93	1.20

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

Subsequently, individual effects were determined for selected food products for each of the quintile group (Table 21). Individual effects represent differences in consumption between quntile groups. When examining the cross-section of households of pensioners in the category of fruit in total), considering the analysed period, the largest individual consumption effects

were recorded for the fifth quintile group. The volume of the fruit consumption in this group was 6.61 kilograms higher than the expected volume of fruit consumption, which for this quintile group, was estimated at the level of 7.11 kilograms. In the quintile groups (from I to IV), one can observe a systematic decrease in the individual effects of consumption in this category by quintile group. A similar pattern can be observed in the category of oils and other vegetable fats and vegetables. In the category referring to fish (in total) the findings indicate the consumption is at higher level than it was predicted by 0.38 kilogram (for I quintile group) to 1.03 kilogram (for V quintile group). It indicates that consumption of analysed categories is very close related with the purchasing power of the household and shows relatively low level of meeting consumer's needs (Tables 20, 21).

Table 21. Individual effects for selected food products for households of pensioners

Food product	**Quintile group**				
	first	second	third	fourth	fifth
Fish (in total)	0.38	0.54	0.68	0.80	1.03
Oils and other vegetable fats	–1.70	2.13	2.40	2.60	3.01
Fruit (in total)	–2.64	3.74	4.52	5.37	6.61
Vegetables (in total)	–1,35	1.69	–1.92	2.15	2.58

Source: Own elaboration on the base of (Central Statistical Office 2003, 2009, 2015, 2019).

To sum up, Random Effects Models (REM) are useful for analysing the differences in food consumption at the level of quintile groups. For those food product categories that show random individual effects, Fixed Effects Models (FEM) are used. This indicates a changing trend in food consumption. What is more, the tendency of decreasing food consumption in relation to income's increasing, concerns mainly basic products. They are characterized by a relatively high level of needs satisfaction. Relatively low level of meeting consumer 's needs we observe regarding to luxury (with higher prices) products, as fruit, vegetables, juices and yoghurts and dairy drinks. The diversification between types of households is observed too: employees – with relatively low responsibility for changes in incomes's increase, and households of pensioners, who demonstrate relatively high demand for mentioned above categories of food products.

2.2.4. Comparable analysis of the level of satisfaction of nutritional needs in Poland in 2003–2019

Econometric studies conducted in the years 2003–2019 clearly show that the level of satisfaction of nutritional needs has been increasing from the years 1990s. It is the result of the changes in consumer behaviour in analysed period. The directions of these changes:

1. Quantitative.
2. Qualitative.
3. Substitutional processes.

Ad.1. The first direction of food consumption model touched quantitative changed. In 2003–2019 we can observed relatively decreasing income elasticity factors as a result of these changed. While performing the assessment concerning the level of satisfaction of nutritional needs in the first and second decade of the 21st century it should be stated that the decrease in consumption elasticity factors took place in each of the analysed groups, while the scope of this decrease is diversified. Relatively most important decrease of factors in the analysed period took place in the expenditure group corresponding to satisfying lower-order needs [Szwacka-Mokrzycka 2018]. The same change direction could be noticed for income elasticity factors for food consumption for product groups. The noticed regularity, expressed in relative decrease in the level of income elasticity factors for nutritional products, constitutes the expression of changes that nutritional needs have undergone over the last dozen years.

Ad.2. Quality changes in consumption result in particular from transitions in consumer's consciousness. They are expressed in the changes of consumption habits, and as a result in the transformation of the preference scheme. Changes in the consumption model are also promoted by consumer education stimulating the shaping of models based on food consumption rationalization. Of particular importance in shaping the behaviour of modern consumers is a new approach emphasising care for personal health, and on this basis creating a lifestyle trend known as wellness. There are various elements at play which have a direct and indirect impact on the physical and mental health of the consumer. The following of which should be mentioned here:

- being and staying healthy,
- convenience,
- concern for the acquisition of the so-called safe food products,
- purchasing local products,
- use of the so-called bulking diets,

- consumption of products that increase the feeling of fullness,
- purchasing low-fat, low-calorie products, following a balanced diet.

Ad.3. Substitutional processes – the analysis of changes in nutritional needs demonstrates that quality changes result to a large extent from the intensification of substitution processes between nutritional products groups. On the base of performed analysis, we can observe the changes in the ways of satisfying the needs, as a result of creating a healthy lifestyle. It has been resalted in increasing consumption of fishes and fruit and vegetables, and at the same time the decreasing of meat and animal fats.

Persistent diversification of household behaviours should also be emphasized. These differences concern on one hand employees' households and on the other, the households of pensioners. Stratification of food consumption models in the presented households is not as important as in the 1990s, but it would be difficult to support the thesis on consumption models in employees' and pensioners' households gradually approaching one another.

***

In the chapter there are presented the economic background in Eastern European countries to estimate the level of economic development from objective and subjective stage. For estimating the level of life, there are analysed household disposable income in 2008–2019, the actual individual and GDP in the EU countries. Nextly trends in consumer's food expenditures in Eastern European countries were presented. The subjective of household situation was estimated on the base of qualitative research. In conclusion, we can say that it is observed wide differentiation in disposable income among EU countries in analysed period. In the group of the EU with disposable income above the EU average were developed countries. Almost of the developing, Eastern European countries in 2008–2019 were below the average. It is worth to mention that the wide range of Actual Individual Consumption (AIC) and Gross Domestic Product (GDP) levels across the EU countries, which differ from the EU average between 53 and 135% in analysed period. When we follow the share of expenditures for food in overall expenditures of households in 2010–2019, it can be noticed that the group of countries with the lowest share of food expenditures (near the EU countries) in total expenditures are Austria, Ireland, United Kingdom, Netherlands, Germany, Sweden, Denmark, Luxembourg (respectively between 7.3 and 9.5%). Relatively high level of food expenditures (between 13 and 17% in total expenditures) is characterized for developing Eastern European countries. The results of analysis for EU countries show that generally trend, households located in countries with a

high standard of living assess their income condition as much better than those in developing countries. The results of this subjective analysis shows that in some Eastern European countries the poverty zone decreased in 2013–2019 years.

There are also presented the results of research touched the satisfaction of nutritional needs in Poland in 2003–2019 were presented. At first the methodology of estimating the level of nutritional needs was presented. Nextly, the results of food consumption elasticity in the households and panel regression models were discussed. The final part of this chapter presented the comparable analysis of the level of satisfaction of nutritional needs in Poland in 2003–2019. Based on the conducted research, it was established that panel models are a useful tool for analysing the consumption of food products. Some of the selected product categories manifest random individual effects. It is possible to note a changing tendency in the consumption of these products. When analysing the constructed models, it is possible to observe significant differences in the consumption of the examined products between the correspondent quintile groups. At this point, it is important to indicate that the above-mentioned disproportion is usually the largest for the two extreme groups. The findings of the present study point to the fact that the consumption behaviour of Poles is significantly differentiated by their level of income. In the case of households with low incomes, the demand for food is relatively high, while the situation in households with relatively high incomes is different. The latter exhibit low consumption sensitivity in relation to the increase in their income. Based on the panel research, the regularity of the increasing level of satisfying food needs depending on the increase in the household income has been confirmed. There is also a considerable differentiation in terms of shaping the consumption of food products depending on product categories. In relation to absolutely basic products, the author observed a relatively small buyers' response to a change in their income, which could be regarded as an increase in consumption. However, the demand for products with a higher degree of food processing is still at a relatively high level. Changes in nutritional needs demonstrates that quality changes result to a large extent from the intensification of substitution processes between food products groups. The conducted analysis of changes in food consumption demonstrates that quality changes result to a large extent from the intensification of substitution processes between food products groups.

3. Criteria for the selection of food products – the results of empirical research: Poland case

3.1. Research objectives, material and methods

The general objective of the empirical research carried out within the framework of this study was to get to know the purchase behaviour of Polish consumers on the food market and to identify the factors determining this behaviour. The general objective was split into the following specific objectives:

- to determine the influence of socio-demographic characteristics on respondents' purchase behaviour
- to determine the influence of socio-demographic characteristics on the identification of factors shaping food shopping behaviour
- to determine the importance of factors determining shopping behaviour
- to determine the impact of socio-demographic characteristics on the assessment of the importance of factors determining food shopping
- to determine the impact of shopping characteristics such as shopping frequency, duration, etc. on the assessment of the importance of determinants of shopping behaviour.

The questionnaire, using a computer-assisted web interview (CAWI), was conducted among 511 Polish respondents of various ages (responses of 17 respondents were excluded from for analysis due to missing responses). Sample selection was accidental – the respondents expressed their willingness and consent to participate in the study by filling in the questionnaire. Only adults (18+) who do food shopping were accepted in the study. The link to the survey questionnaire was posted online on social networking sites. The empirical research was preceded by desk research. The empirical research process is presented below:

1. Development of a survey questionnaire
2. Testing of the questionnaire among 30 respondents.
3. Checking the validity of the questionnaire.
4. Conducting surveys among 528 respondents.
5. Selection and rejection of incomplete questionnaires.
6. Qualification of 511 questionnaires.

The questionnaire included filtering and multiple-choice questions as well as rating questions with a five-point scale, and Likert scale. The following descriptive statistics measures were used in the analysis of the research material: mean, median, standard deviation, and a variety of statistical tests were used to analyse the relationship between socio-demographic factors and shopping behaviour:

a) Kendall's tau correlation analysis: a non-parametric method used to examine the relationship between two variables measured on an ordinal scale. The tau statistic is defined by the formula:

$$\boldsymbol{\tau = \frac{2(n_c - n_d)}{\sqrt{n(n-1) - T_x} \cdot \sqrt{n(n-1) - T_y}}}$$

where n_c – number of observations pairs for which the values of features X and Y change in the same direction, n_d – number of observation pairs for which the values of features X and Y change in a different direction, $T_x = \sum_i (t_{i(x)}^2 - t_{i(x)})$, $T_Y = \sum_i (t_{i(y)}^2 - t_{i(y)})$, t – number of cases in the rank.

The value of Kendall's tau correlation may range from –1 to 1 with values closer to –1 indicating a strong negative correlation and values closer to 1 a strong positive correlation.

b) Spearman's rho correlation analysis: a non-parametric method for examining the relationship between two variables measured on an ordinal or quantitative scale. The rho statistic is defined by the formula:

$$\rho = 1 - \frac{6 \sum_i^n d_i^2}{n(n^2 - 1)}$$

where d_i^2 – squares of the differences between the ranks of the corresponding values of characteristics X and Y.

c) Mann-Whitney U test: a non-parametric test used to compare the average level of a dependent variable between two independent groups of observations. Statistically significant results indicate that there are differences between groups and $r = \frac{Z}{\sqrt{n}}$ measures the strength of these differences, where 0–0.3 are small differences, 0.3–0.5 moderate differences, 0.5–1 strong differences. The *Z* value is calculated from the formula:

$$Z = \frac{U - \frac{n_1 n_2}{2}}{\sqrt{\frac{n_1 n_2 (n_1 + n_2 + 1)}{12}}}$$

where $U = R_{\min\,(k)} - \frac{n_k(n_k+1)}{2}$, $R_{\min(k)}$ – the sum of ranks for the group whose sum is smaller, n_k – the number of observations in the group with the smaller sum of ranks.

Table 22. Characteristics of the respondents in terms of socio-demographic features

Characteristic	Number of respondents (*N*)	Share (%)
Sex		
female	253	49.5
male	258	50.5
Age		
18–25	214	41.9
26–39	121	23.7
40–60	163	31.9
more than 60	13	2.5
Education		
less than secondary	20	3.9
secondary	101	19.8
student	112	21.9
higher	278	54.4
Place of residence		
village	43	8.4
town up to 50,000 inhabitants	43	8.4
city from 50,000 to 150,000 inhabitants	40	7.8
city from 150,000 to 500,000 inhabitants	79	15.5
city above 500,000 inhabitants	306	59.9
Number of people in the household		
1 person	111	21.7
2 persons	149	29.2
3 persons	80	15.7
4 persons	128	25.0
above 4 persons	43	8.4

Source: Own research.

The questionnaire was carried out in a group of N = 511 people of which 50.5% were men (*N* = 258) and 49.5% women (*N* = 253). The respondents were mainly aged 18–25 years (*N* = 214, 41.9%) and 40–60 years (*N* = 163, 31.9%). Respondents aged 26–39 years accounted for 23.7% (*N* = 121) and the group of respondents aged over 60 years was the least numerous (*N* = 13, 2.5%). In terms of education, people with higher education (*N* = 278, 54.4%) and those in the course of their university studies (*N* = 112, 21.9%) predominated. Respondents lived

mainly in large cities with more than 500,000 inhabitants (*N* = 306, 59.9%) or in cities with a population between 150–500,000 inhabitants (*N* = 79, 15.5%), with a small proportion living in smaller towns and villages. The subjects were mainly from 2-person households (*N* = 149, 29.2%), 4-person households (*N* = 128, 25.0%) and 1-person households (*N* = 111, 21.7%). The exact demographic characteristics of the study subjects are presented in Table 22.

3.2. Characteristics of the food purchasing behaviour

More than half of subjects (*N* = 511) shopped for groceries several times a week (56.6%) and 35.8% did so once a week. The remaining people shopped less frequently. Respondents usually spent up to half an hour (41.1%) or between 30–60 minutes (42.9%) shopping for groceries. A smaller proportion of people spent up to 2 hours (13.3%) or more than 2 hours (2.7%) on one-off grocery shopping.

Half of the respondents admitted (49.7%) that they often read food labels, and 28.4% of the respondents always read the information on the label. 10% of people never read such information. People reading food labels paid attention mainly to the expiry date and ingredients, and less often to the nutritional values table, brand, country of origin. Rarely did the respondents look for information about certificates and interesting facts from the manufacturer on the product label. Figure 3 shows the percentage of respondents reading specific pieces of information on the food label.

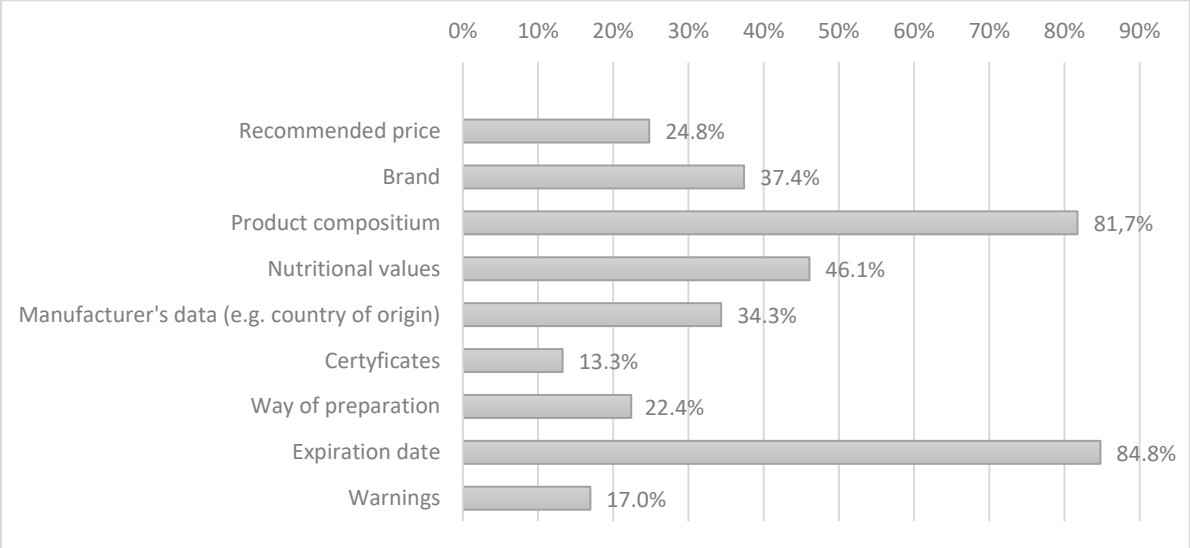

Fig. 3. Reading information on food labels

Source: Own research.

The respondents were also asked to state to what extent they agree with selected statements on food shopping. They could express their opinion on a five-point Likert scale (from 1 – strongly disagree to 5 – strongly agree). Most respondents agreed that their demographic features (gender, age, place of residence, education, income and household size) determine their shopping decisions and that the arrangement of the shop space and the so-called shop climate (e.g. order, music, space, level of crowding) influence their shopping decisions. On the other hand, they were least likely to agree that the marketing activities of food producers and retailers influence their purchase decisions and that the economic situation of the country influences their purchase decisions in the food market (Table 23).

Table 23. Descriptive statistics for agreeing with statements on shopping

Agreeing with statements on shopping	***Min***	***Max***	***M***	***SD***	***Me***
The economic situation of the country affects my shopping decisions.	1	5	3.21	1.20	4
My demographic characteristics (gender, age, place of residence, education, income and household size) influence my shopping decisions.	1	5	3.95	1.19	4
My shopping emotions influence my shopping decisions.	1	5	3.37	1.27	4
The marketing activities of food manufacturers and retailers influence my shopping decisions.	1	5	3.01	1.26	3
The layout of the shop and the so-called shop climate (e.g. order, music, space, level of crowding) influence my shopping decisions.	1	5	3.80	1.25	4

Min – minimum, *Max* – maximum, *M* – mean, *SD* – standard deviation, *Me* – median

Source: Own research.

Respondents also rated on a scale of 1 to 5 the importance of the product features that guided them when shopping. The respondents considered freshness to be the most important feature of a food product, followed by its expiry date. Other important features for the respondents included product composition, price and appearance, while the least important features were the country of origin and brand (Table 24).

Table 24. Descriptive statistics for the importance of product attributes

Product features	***Min***	***Max***	***M***	***SD***	***Me***
Price	1	5	3.69	1.18	4
Product appearance	1	5	3.47	1.05	4
Brand	1	5	3.00	1.11	3
Country of origin	1	5	2.92	1.24	3
Expiration date	1	5	4.04	1.19	4
Product freshness	1	5	4.55	0.90	5
Product composition	1	5	3.86	1.03	4
Product without food additives (without "E" in the composition)	1	5	3.17	1.32	3

Min – minimum, *Max* – maximum, *M* – mean, *SD* – standard deviation, *Me* – median

Source: Own research.

The assessment of the importance of individual product features varied slightly by gender. Women found most features (except brand and country of origin) more important than men (Figure 4).

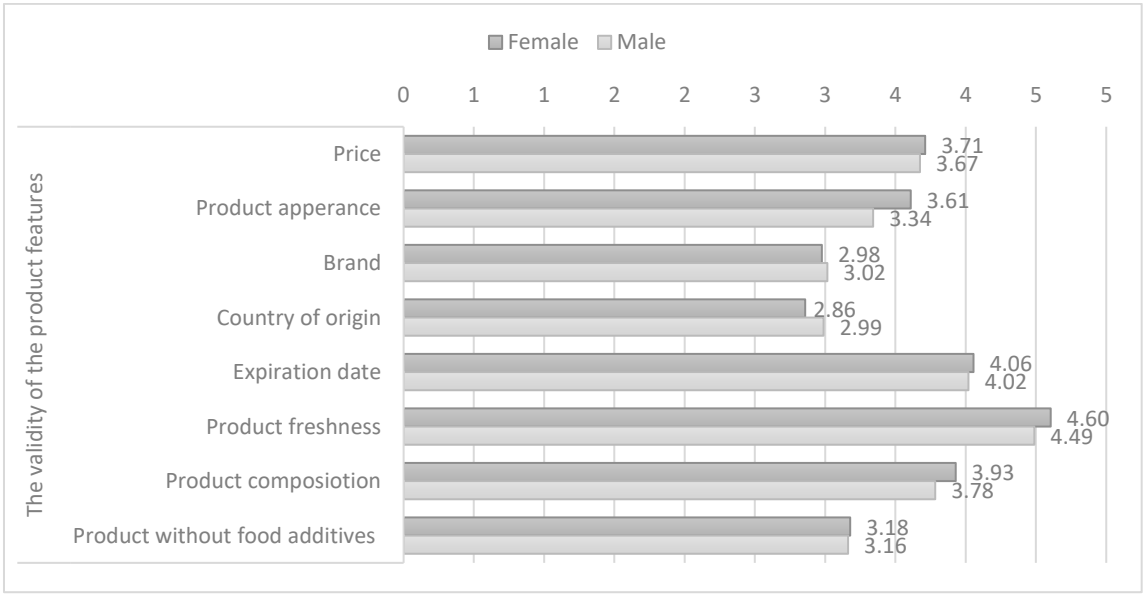

Fig. 4. Average importance ratings for product attributes by gender

Source: Own research.

Similarly, respondents were asked to rate the importance of food packaging attributes on a 5-point scale. Respondents ranked easy handling/transportation as the most significant

when choosing packaging, followed by packaging aesthetics and recycling potential. Packaging size was the least important to respondents (Table 25).

Table 25. Descriptive statistics for the importance of packaging attributes

Importance of packaging attributes	***Min***	***Max***	***M***	***SD***	***Me***
Product packaging size (e.g. family)	1	5	2.67	1.24	3
Recyclable packaging	1	5	3.12	1.37	3
Packaging aesthetics	1	5	3.17	1.25	3
Easy to open	1	5	2.98	1.30	3
Easy to handle/transport	1	5	3.32	1.27	4

Min – minimum, *Max* – maximum, *M* – mean, *SD* – standard deviation, *Me* – median

Source: Own research.

Assessment of the importance of packaging attributes varied by gender. On average, all packaging attributes except size (i.e. easy to handle/transport, easy to open, aesthetics, recycling potential) received higher importance ratings among women than men.

Respondents were also asked for their opinion on the impact of the COVID-19 pandemic on their shopping behaviour. 36.4% of respondents felt that the pandemic had definitely changed or rather changed their shopping behaviour, 33.2% felt that the pandemic had not changed their behaviour and the remaining 20.4% of respondents found it difficult to tell.

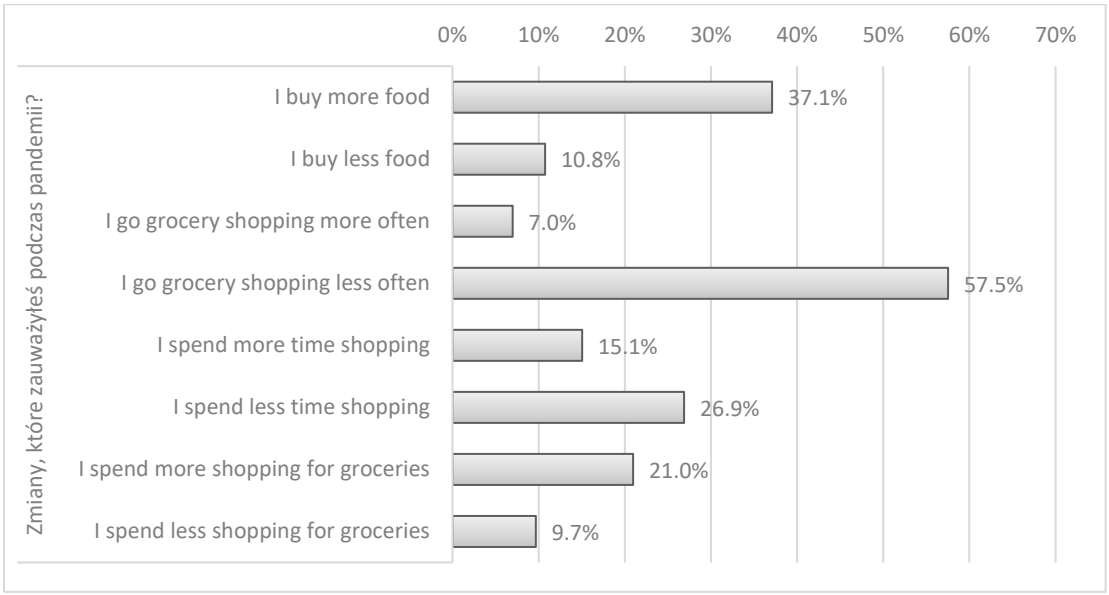

Fig. 5. The impact of the COVID-19 pandemic on purchasing decisions

Source: Own research.

Most often respondents went grocery shopping less often due to the pandemic, and they also bought more food and spent less time shopping while at the same time spending more money (Figure 5).

3.3. The relationship between socio-demographic respondent features and their food purchasing behaviour

One of the aims of the study was to find out whether the socio-demographic characteristics of the respondents influence their shopping behaviour. First, we checked whether people differing in gender, age, place of residence, household size and education also differ in their frequency of shopping for food. For this purpose, a series of Kendall's tau analyses were performed. The results of Kendall's tau analyses mostly proved statistically insignificant $p > 0.05$ (Table 26), which means that in the studied group shopping frequency did not depend on most socio-demographic characteristics. We only managed to prove a link between the frequency of grocery shopping with gender $\tau = 0.09$; $p < 0.05$. In the studied group, men proved more frequent grocery shoppers than women. No relationship was found between shopping frequency and age, place of residence, education and number of persons in the household.

Similarly, Kendall's tau analyses were used to test whether time spent shopping was correlated with respondents' characteristics. The results of our analyses showed that time spent shopping was statistically significantly associated with gender $\tau = -0.13$; $p < 0.01$, age $\tau = 0.10$; $p < 0.05$ and household size $\tau = 0.09$; $p < 0.05$. On average, women and people aged between 26–39 years and between 40–60 years and those from households with more people spent more time on a single shopping session. However, the place of residence and education level do not seem to be linked to the time spent shopping (Table 27).

Kendall's tau tests were also used to analyse whether the frequency of reading information on food labels was related to socio-demographic characteristics. The analysis results mostly turned out to be statistically insignificant with $p > 0.05$, which means that the frequency of reading food labels did not depend on socio-demographic characteristics in the study group. We only managed to show a link between frequency of label reading and gender $\tau = -0.10$; $p < 0.05$. Information on product labels was read more often by women than men. No relationship was found between label reading and age, place of residence, education and household size.

Table 26. Results of Kendall's tau analyses for the link between socio-demographic characteristics and grocery shopping frequency

Specification	Frequency of food shopping			
	once a month	**several times a month**	**once a week**	**several times a week**
Sex	**τ = 0.09; p <0.05**			
female	0.0%	9.1%	39.1%	51.8%
male	1.6%	4.7%	32.6%	61.2%
Age	**τ = 0.03; p = 0.484**			
18–25	0.0%	5.6%	39.7%	54.7%
26–39	3.3%	2.5%	38.8%	55.4%
40–60	0.0%	12.3%	31.3%	56.4%
more than 60	0.0%	0.0%	0.0%	100.0%
Education	**τ = 0.04; p = 0.270**			
less than secondary	0.0%	7.0%	55.8%	37.2%
secondary	0.0%	0.0%	58.1%	41.9%
student	0.0%	15.0%	15.0%	70.0%
higher	0.0%	0.0%	38.0%	62.0%
Place of residence	1.3%	8.5%	32.0%	58.2%
village	**τ = 0.07; p = 0.092**			
town up to 50,000 inhabitants	0.0%	15.0%	50.0%	35.0%
city from 50,000 to 150,000 inhabitants	0.0%	11.9%	25.7%	62.4%
city from 150,000 to 500,000 inhabitants	0.0%	5.4%	49.1%	45.5%
city above 500,000 inhabitants	1.4%	5.0%	33.1%	60.4%
Number of people in the household	**τ = –0.02; p = 0.581**			
1 person	3.6%	0.0%	28.8%	67.6%
2 persons	0.0%	11.4%	37.6%	51.0%
3 persons	0.0%	11.3%	41.3%	47.5%
4 persons	0.0%	7.0%	38.3%	54.7%
above 4 persons	0.0%	0.0%	30.2%	69.8%

τ – Kendall's tau statistic, p – statistical significance

Source: Own research.

Table 27. Results of Kendall's tau analyses for the link between socio-demographic characteristics and time spent on grocery shopping

Specification	**Time spent on one-time purchases of food products**			
	<0,5 h	**from 0,5 to 1 h**	**from 1 to 2 h**	**>2 h**
Sex	**τ = –0,13; *p* <0,01**			
female	35.2%	45.5%	13.8%	5.5%
male	46.9%	40.3%	12.8%	0.0%
Age	**τ = 0.10; *p* <0.05**			
18–25	44.4%	49.5%	6.1%	0.0%
26–39	33.9%	47.9%	18.2%	0.0%
40–60	37.4%	33.7%	20.2%	8.6%
more than 60	100.0%	0.0%	0.0%	0.0%
Education	**τ = 0.02; *p* = 0.567**			
less than secondary	23.3%	48.8%	27.9%	0.0%
secondary	51.2%	48.8%	0.0%	0.0%
student	45.0%	45.0%	10.0%	0.0%
higher	40.5%	55.7%	3.8%	0.0%
Place of residence	41.8%	37.6%	16.0%	4.6%
village	**τ = -0.07; *p* = 0.074**			
town up to 50,000 inhabitants	30.0%	30.0%	40.0%	0.0%
city from 50,000 to 150,000 inhabitants	37.6%	48.5%	13.9%	0.0%
city from 150,000 to 500,000 inhabitants	34.8%	50.9%	14.3%	0.0%
city above 500,000 inhabitants	45.7%	38.5%	10.8%	5.0%
Number of people in the household	**τ = 0.09; *p* <0.05**			
1 person	55.9%	36.0%	8.1%	0.0%
2 persons	37.6%	47.0%	6.0%	9.4%
3 persons	22.5%	58.8%	18.8%	0.0%
4 persons	41.4%	39.1%	19.5%	0.0%
above 4 persons	48.8%	27.9%	23.3%	0.0%

τ – Kendall's tau statistic, *p* – statistical significance

Source: Own research.

3.4. The impact of socio-demographic characteristics on the identification of determinants for food market behaviour

In the further part of the analysis, we checked whether the socio-demographic characteristics of the respondents were correlated to the choice of factors determining, in their own opinion, their shopping behaviour. First, we checked whether the gender of the respondents was linked to the statements regarding the influence of the various market, product and consumer-related factors on food market behaviour. Table 28 shows the results of the Mann- Whitney U-test analyses for the comparison of agreeing with statements on shopping and shopping determinants by gender. The Mann-Whitney U-test is a non-parametric test used to compare the average level of a dependent variable between two independent groups of observations. Statistically significant results indicate that there are differences between groups and $r = \frac{Z}{\sqrt{N}}$ measures the strength of these differences, where 0–0.3 are small differences, 0.3–0.5 moderate differences, 0.5–1 strong differences.

The analyses showed a statistically significant difference between women and men p <0.05 in their agreement with the shopping statements. Women were more likely than men to believe that their shopping decisions are influenced by the economic situation of the country, their socio-demographic characteristics and emotions, the marketing activities of manufacturers and retailers, and the development of the shop space. Men subjectively believed that these characteristics had little influence on their purchasing decisions. The biggest differences between men and women were found for the influence of emotions on purchase decisions.

Gender was also found to significantly (p <0.05) differentiate factors determining purchase decisions. Women were more likely than men to believe that their purchase decision was influenced by promotions for the product, opinions about the product, the product's fit with their diet, preferences of household members and advertising. The biggest differences between men and women were found with respect fit to household preferences. Table 28 presents the analysis results.

Table 28. Results of the Mann-Whitney U-test analyses for the comparison of agreeing with statements on shopping and shopping determinants by gender.

		Female		**Male**		***P***	***P***	***r***
		M	*SD*	*M*	*SD*			
Agreeing with statements on shopping	The economic situation of the country affects my shopping decisions.	3.35	1.19	3.08	1.20	2.70	0.007	0.12
	My demographic characteristics (gender, age, place of residence, education, income and household size) influence my shopping decisions.	4.06	1.17	3.84	1.21	2.30	0.021	0.10
	My shopping emotions influence my shopping decisions.	3.71	1.08	3.05	1.35	5.72	0.000	0.25
	The marketing activities of food manufacturers and retailers influence my shopping decisions.	3.19	1.20	2.83	1.29	3.24	0.001	0.14
	The layout of the shop and the so-called shop climate (e.g. order, music, space, level of crowding) influence my shopping decisions.	4.09	1.02	3.52	1.39	4.26	0.000	0.19
Influence on purchasing decisions	Promotions (price reductions, free items, giveaways, etc.)	2.51	0.75	2.33	0.81	2.70	0.007	0.12
	Habits associated with the product	3.01	0.80	2.97	0.62	1.38	0.169	0.06
	Opinions on the product	2.54	0.78	2.35	0.78	2.55	0.011	0.11
	Product fit to the diet	3.05	0.88	2.38	0.94	7.88	0.000	0.35
	Preferences of household members	2.72	1.05	2.53	0.95	2.55	0.011	0.11
	Product advertising	1.68	0.71	1.50	0.56	2.66	0.008	0.12

M – mean, *SD* – standard deviation, *Z* – Mann-Whitney U statistic, *p* – level of statistical significance, *r* –significance of differences

Source: Own research.

Similarly, the Mann-Whitney U-test analyses were used to investigate whether gender influences the evaluation of the importance of product features and its packaging as determinants of consumer behaviour on the food market. The analyses showed that gender influenced

the evaluation of the importance of product appearance as a factor influencing purchase decisions ($Z = 2.65$; $p < 0.05$; $r = 0.12$). Women paid more attention to product appearance than men. However, gender was not proven to influence the evaluation of other product attributes (Table 29).

Another series of analyses showed, however, that women and men differed statistically significantly in their assessment of how easy it was to carry and transport the product $Z = 2.31$; $p < 0.05$; $r = 0.10$. Women valued products that were easy to carry and transport more. However, gender was not proven to influence the evaluation of other product packaging attributes (Table 29).

Table 29. Results of Mann-Whitney U-tests for comparing the importance of product attributes and packaging by gender

		Women		**Men**		***P***	***P***	***r***
		M	*SD*	*M*	*SD*			
Importance of product features	Product price	3.71	1.22	3.67	1.14	0.80	0.421	0.04
	Appearance of the product	3.61	1.01	3.34	1.07	2.65	0.008	0.12
	Product brand	2.98	1.15	3.02	1.07	0.23	0.821	0.01
	Country of origin	2.86	1.28	2.99	1.21	1.30	0.192	0.06
	Shelf life	4.06	1.18	4.02	1.19	0.35	0.724	0.02
	Product freshness	4.60	0.84	4.49	0.95	0.87	0.387	0.04
	Composition of the product	3.93	1.06	3.78	0.99	1.87	0.062	0.08
	Product without food additives	3.18	1.39	3.16	1.26	0.17	0.868	0.01
Importance of packaging features	Size of the product packaging	2.59	1.16	2.75	1.31	1.35	0.177	0.06
	Recyclable packaging	3.23	1.39	3.01	1.35	1.77	0.076	0.08
	Packaging aesthetics	3.19	1.28	3.16	1.22	0.15	0.879	0.01
	Easy to open	3.04	1.29	2.93	1.31	0.81	0.416	0.04
	Easy to handle/transport	3.44	1.24	3.20	1.29	2.31	0.021	0.10

M – mean, *SD* – standard deviation, *Z* – Mann-Whitney U statistic, *p* – level of statistical significance, *r* –significance of differences

Source: Own research.

Further, in the analysis, we examined whether factors influencing purchase decisions were correlated to age, place of residence, education and household size. For this purpose, a series of Spearman's rho correlation analyses were performed. It is a non-parametric test used

to examine the relationship between variables measured on a quantitative or ordinal scale. Table 30 presents the analysis results.

Table 30. Results of Spearman's rho correlation analyses for the correlation between factors determining purchase decisions and age, place of residence, education, and household size

Specification		Age	Size of the place of residence	Education level	Household size
Agreeing with statements	The economic situation of the country affects my shopping decisions.	0.11*	0.02	0.11*	0.11*
	My demographic characteristics (gender, age, place of residence, education, income and household size) influence my shopping decisions.	–0.15**	–0.01	0.02	0.08
	My shopping emotions influence my shopping decisions.	–0.14**	–0.14**	–0.18***	–0.01
	The marketing activities of food manufacturers and retailers influence my shopping decisions.	0.02	–0.08	–0.01	–0.07
	The layout of the shop and the so-called shop climate (e.g. order, music, space, level of crowding) influence my shopping decisions.	0.02	0.09*	0.02	–0.08
Influence on purchasing decisions	Promotions (price reductions, free items, giveaways, etc.)	–0.32***	–0.06	–0.06	0.06
	Habits associated with the product	0.02	0.11*	0.11*	–0.06
	Opinions on the product	–0.04	0.14**	0.18***	–0.20***
	Product fit to the diet	–0.10*	0.07	–0.04	–0.17***
	Preferences of household members	0.08	0.07	0.02	0.29***
	Product advertising	0.01	–0.11*	–0.06	0.08

*p <0.05; **p <0.01; ***p <0.001

Source: Own research.

The correlation analyses showed that with an increase in age respondents agreed more that purchase decisions are influenced by the economic situation of the country and less that these decisions are influenced by demographic characteristics and emotions decreased. As age increased, respondents were less likely to admit that their purchases were determined by product promotions or fit with their diet. City and large town dwellers were more likely to be guided by shop appearance, habits and opinions about a given product, and less likely to be influenced by product advertising.

As their education level increased respondents were less often of the opinion that their purchasing decisions are influenced by emotions but rather by the economic situation in the country. Higher education was also associated with paying more attention to shopping habits and buying products based on opinions about them.

People from larger households were more often of the opinion that their purchasing decisions are influenced by the economic situation of the country, and the preferences of household members were more important to them. As household size increased, respondents attached less importance to opinions about the product and the product's suitability to their diet.

Our analysis shows that age, education, and place of residence were associated mainly with emotions in purchasing decisions, where emotions influenced purchasing decisions mainly in women, people living in small towns, and those with lower education levels. Education, place of residence, and household size were also associated with attention to product opinions, with opinions being important especially for people from big cities, with higher education levels, and from small households.

Similarly, the relationship between the importance of product attributes and packaging and age, place of residence, education and household size was examined using Spearman's rho correlation analysis (Table 31).

The results of the correlation analyses show that as the subjects' age increased, the importance of the product brand, country of origin, shelf life and absence of food additives increased, while the importance of the product price decreased. As age increased, respondents also paid more attention to package size and aesthetics, ease of opening and transport. Age proved most strongly correlated with the importance of the country of origin and ease of opening.

However, no strong correlation was found between the respondents' place of residence and their evaluation of the importance of product features for their shopping decisions. The analysis only proved that for people from bigger cities, the country of origin and ease of opening of the product were more important.

It was also shown that the importance of the product's country of origin product increased with increasing education levels, while the importance of product price and the packaging aesthetics decreased.

People from larger households paid more attention to the product brand, the expiry date and the packaging size and its easy transport, while the price of the product was less important to them.

Table 31. Spearman's rho correlation analysis results for the relationship between the importance of product and its packaging's features and age, place of residence, education, and household size

Specification		Age	Size of the place of residence	Education level	Household size
Importance of product features	Product price	–0.22***	–0.06	–0.24***	–0.09*
	Appearance of the product	0.05	0.08	0.01	–0.04
	Product brand	0.20***	0.07	0.06	0.12**
	Country of origin	0.35***	0.10*	0.28***	0.02
	Shelf life	0.18***	0.07	–0.08	0.10*
	Product freshness	–0.08	0.06	–0.10*	0.02
	Composition of the product	–0.01	0.05	0.01	–0.05
	Product without food additives	0.18***	0.06	0.07	0.01
Importance of packaging features	Size of the product packaging	0.10*	0.01	–0.05	0.22***
	Recyclable packaging	0.06	0.07	0.00	–0.02
	Packaging aesthetics	0.10*	0.04	–0.13**	0.08
	Easy to open	0.30***	0.09*	–0.06	0.06
	Easy to handle/transport	0.22***	0.04	–0.02	0.13**

*p <0.05; **p <0.01; ***p <0.001

Source: Own research.

The study also aimed to check if there was a relationship between shopping frequency (which influences consumers' experience), time spent on a single shopping event, frequency of reading the information contained in the labels and evaluation of the importance of various product and packaging features in the context of their influence on shopping behaviour. Table 32 presents the results of Spearman's rho correlation analyses. More frequent shoppers paid more attention to the ease of opening, and less attention to price, freshness or expiry date. The more time the respondents spent on each shopping event, the more important were almost all product features for them and the more attention they paid to the appearance of the packaging and its recycling potential.

Table 32. Results of Spearman's rho correlation analyses for the relationship between the importance of product's and its packaging's attributes and consumer behaviour

Specification		How often do you shop for groceries?	How much time do you spend shopping for groceries on average?	How often do you read the information on the labels?
Importance of product features	Product price	–0.09*	0.04	–0.20***
	Appearance of the product	0.00	0.03	0.25***
	Product brand	0.04	0.10*	–0.06
	Country of origin	–0.03	0.22***	0.12**
	Shelf life	–0.16***	0.24***	0.11*
	Product freshness	–0.09*	0.08	0.05
	Composition of the product	–0.15**	0.14**	0.53***
	Product without food additives	–0.08	0.20***	0.39***
Importance of packaging attributes	Size of the product packaging	0.01	0.07	0.00
	Recyclable packaging	–0.01	0.13**	0.30***
	Packaging aesthetics	0.01	0.14**	0.24***
	Easy to open	0.17***	–0.01	0.19***
	Easy to handle/transport	0.05	0.07	0.10*

*p <0.05; **p <0.01; ***p <0.001

Source: Own research

Frequent label reading was associated with greater attention to product ingredients, country of origin, appearance, and lesser attention to the product price. Consumers who read the labels were more likely to think that packaging attributes were important to them, in particular its aesthetics and recycling potential.

***

Empirical research, the results of which are presented in this chapter, aimed at identifying criteria (factors) that guide respondents in the selection of food products and at characterising purchase behaviours on the food market. When identifying these criteria, we paid attention to factors related to the product, the consumer and the market. From among the product features, respondents attached the most importance to freshness, followed by the expiry date, with product ingredients, its price and appearance also being important for the respondents, and the country of origin and brand being considered the least important attributes. When it comes to packaging attributes respondents mainly paid attention to easy handling/transport, as well as aesthetics and recycling potential.

According to the respondents, their purchasing decisions are most influenced by their demographic characteristics and the layout of the shop space. The habit of using a particular product, opinions about it, and promotions also proved to be determinants of food purchase. Respondents believed that they do not pay attention to product advertisements.

Respondents usually went shopping for food several times a week or once a week, with no more than an hour of their time spent on it.

Socio-demographic characteristics, especially age, education and household size, influenced the importance ratings of product characteristics determining food shopping behaviour. As the age of the respondents increased, the importance of country of origin, shelf life and absence of food additives increased, while the importance of product price decreased. As age increased, respondents also paid more attention to package size and aesthetics, ease of opening and transport. Those with higher education were more likely to pay attention to the country of origin, and those with larger households were more likely to pay attention to the size of the packaging and the ease of product transport from shop to home.

Demographic characteristics also influenced respondents' purchase decisions. In women, small-town dwellers and respondents with a low level of education, shopping emotions played a large role in purchasing decisions. As their education level increased respondents were less often of the opinion that their purchasing decisions are influenced by emotions but rather by the economic situation in the country. Education, place of residence, and household size were also associated with attention to product opinions, with opinions being important especially for people from big cities, with higher education levels, and from small households. Shopping decisions and the importance of product attributes determining food shopping were also proven to be influenced by shopping frequency and time. More frequent shopping was associated with less attention paid to the expiry date, product ingredients and freshness. Frequent

shoppers were more likely to believe that their shopping decisions were influenced by the design of the shop space.

4. Trends in consumer behaviour change in the domestic food market: the causes and consequences – Latvia and Lithuania case

4.1. Changing consumer behaviour regarding food and habits – theoretical background

Every year homemade and artisan products become more demanded, since consumer demands for food quality are increasing. That means a high-quality product becomes increasingly popular. Homemade and artisan products are an alternative food supply chain to the final consumer, where the products reach the consumer directly from the producer. To make home and artisan production cost-effective, an objective assessment must be made carried out at all stages "from field to table".

To make short food chains effective, it is essential that home and artisan producers operate in a coherent way – through collaboration, digitalization, facilities, websites, social networks and e-commerce. Consequently, home and artisan producers for quality products would receive a fair and equitable remuneration. In that way such products would be more widely available for consumers. As a result, everybody would benefit from higher profits, resulting in economic prosperity. Home and artisan producers are classified according to their kind of economic activity: meat and meat products, dairy, fishery, fruit, berries and vegetable processing, bread and bakery products, apiculture products, non-alcoholic drinks and home cooking.

In today's world, consumers daily habits change rapidly, and changes in consumer habits and behaviours are being extensively studied and analysed around the world. As consumer behaviour and habits change, so do the demand for and habits regarding food. Consumer behaviour changes every year, and the consumers choose healthier, more environmentally friendly and higher-quality and value added organic/ecological foods. In addition, it becomes increasingly important that food can be purchased directly from the producer and is of known origin, thereby minimizing the length of the food supply chain. The current processes of change in the world contribute to the change of consumer values. Given the establishment of a sustainable system for the availability of quality food, the growing consumer demand for it and the importance of food origin, exogenous factors can have both positive and negative effects on consumers' food choices. At the same time, corporate social responsibility, which is the latest trend

in society, emerges fast, thereby increasing the values of life quality, reducing the environmental impact of humanity and promoting sustainable living.

In addition, changes in consumer income levels make a significant effect on the consumer demand and supply. As incomes rise, consumer demands for both food quality and quantity increase. The consumer becomes more demanding, and consequently producers have to seek new solutions to meet consumer needs by creating stable values and solutions. Such solutions can range from specially designed and labelled food systems, e.g. organic food or home producer food, to "friendly" brands. Home producer cooperatives, direct buying groups, various online shopping platforms and other innovations also help consumers to find and buy the products they want.

4.2. Current processes of change in the world as a cause of change in the human value system and its effect on consumer choice

Today's society changes fast and continuously owing to various processes of global, political and environmental change. We can say that we live in a diverse, resource-rich world, and we can create various resources ourselves or affect the availability of resources in our usual environment by means of our habits and behaviours.

To be able to predict future consumer trends and value change factors that are affected by global processes of change, it is important to analyse both current and future values and criteria that could influence consumer behaviours and identify the key factors of future consumer behaviour. Various exogenous factors are already changing consumer behaviour and are currently extensively researched at the international level. There are observed five important consumer trends in the world that influence consumption choices and the effects of the choices on societal values (FAO Fisheries and Aquaculture Circular No. 1089, 2015):

- food safety and health benefits;
- corporate social responsibility;
- production systems and innovations;
- sustainability;
- origin of food.

The relevant actions taken by national governments, non-governmental organizations, the private sector and individuals are taken into account in relation to each of the trends.

Food safety and health benefits can be significantly affected by government interventions in the diets and lifestyles of the population to control obesity and contribute to a healthier society. The instruments applied are legislation and scientific research on the effects of food on human health. Until recently, restaurants offering fast food were popular, which led to a gradual increase in obesity and an increased risk to public health. In recent years, however, there has been an increasing demand for healthy, balanced foods, and the consumers preferred foods without or with minimal food additives in addition to fresh, uncooked foods. Both the Codex Alimentarius (www.fao.org) at international level and EU legislation require that food additives not be added to fresh food (Regulation No. 1333/2008). This is an important factor contributing to establishing reliable food traceability systems that provide consumers with information on food safety, composition and origin and reliable information for making their daily dietary choices. As a result, the regulated systems in place have increased the demand for food products that are labelled and certified by relevant authorised institutions, increased demand for organic/ecological food and reduced the demand for fast-food products.

The trend towards the introduction of food production systems and new innovations and solutions increasingly affects changes in food production. The return to traditional food production systems, which have traditionally been a way of life for previous generations, is gaining in popularity, e.g. organic food production. Although nowadays a regulated system – certification that sets specific criteria for organic food (Council Regulation...., 2007) – is in place to label foods as organic. However, due to cultural and historical traditions, food produced on small farms by applying traditional techniques is still equated with organic food in the public perception, and it is also considered to be healthier and having higher value added. As a result, the demand for and supply of certified organic food tend to increase.

In parallel, a lot of innovations are introduced in production processes in relation to genetic modification and use of nanotechnologies in the production of novel foods. Genetic modifications often reduce costs, increase crop yields and make crops more resistant to diseases and adverse conditions, yet consumer scepticism, prejudice and negative attitudes towards genetically modified food represent the negative factor. This trend is often facilitated by national legislation, which prevents or severely restricts the cultivation of genetically modified crops and the use of genetically modified inputs in food production. The same situation is observed regarding the application of nanotechnologies in the production of novel foods. Nanotechnologies give opportunities for the production of novel foods, yet the high cost of introducing such products and technologies because of the research, demonstration and certification involved is

a negative factor. Consequently, the further adaptation of novel foods is slow and time-consuming, and their certification involves a long bureaucratic process.

The trend of corporate social responsibility: raising an awareness of social problems in food production by the media, NGOs, consumer brands and other stakeholders. Awareness-raising provides the public with full information about the product and its movement through the supply chain provided by producers. In addition, the availability of information on product defects, production flaws, failures or missed social responsibility targets is increased. This builds consumer and public confidence in food producers, food suppliers and others involved in food supply chains. In recent years in Latvia too, an increasing number of small company groups, which cooperate in purchasing food directly from producers based on their experience and positive information in the media, have emerged, and the public is happy to support socially responsible companies. Besides, if the public is clearly aware of a producer's objectives, it is happy to engage in activities to achieve the objectives. As a result, there is a growing trend for producers and other stakeholders to shift their business towards social responsibility.

Consequently, there is an increasing public preference for "socially responsible" products, driven by the consumer awareness of various foods.

The demand for products from reliable brands/producers is consistently increasing in the society, and the preference is given to "honest" brands/producers.

The trend towards sustainability is promoted through adopting legislation on sustainable and safe food production.

Norway first defined sustainable consumption in 1994 as the use of goods and services to meet basic needs and improve the quality of life while reducing the exploitation of natural resources and pollution throughout the life cycle of goods and services without compromising the needs of future generations (Oslo roundtable…, 1994).

Due to various processes of change in the world, it is vital to develop sustainable food production systems that are going to influence consumer habits in the future. One of the most important values of a sustainable system that makes a significant effect on sustainability today is the production of organic and ecological foods that are considered to be the cornerstone of a sustainable food production chain. For the visibility of organic food, an organic food label was created to promote the trend towards sustainability. As a result, there should be an increase in the demand for products that are organically certified and produced in a sustainable way.

The country and the region of origin – measures promoting the demand for local food taken by social agents (governments and NGOs) play an important role in consumer choices. It has been found that consumers all over the world prefer domestic food over imported one if the

prices are competitive and reasonable. Various processes of change are constantly occurring in the world – ecological, biological and environmental changes due to various cataclysms. For example, the United States is considered a genetically modified food powerhouse, while Japan or Ukraine are associated with nuclear disasters that have created a radioactive environment. Such negative factors have a significant impact on consumer choices, and the food whose country of origin is associated with negative factors is not the primary choice of consumers. Such available information educates consumers on food, and consequently the consumers make informed choices. Consumers most often choose locally sourced food because they are convinced of its origin and quality.

In addition, it is important to assess/analyse the consumer decision-making process in order to identify the potential for behavioural interventions that lead to large-scale and lasting changes in consumer behaviour and then in the food system itself (WWF 2016).

Consumers represent a major driver in the global economy, accounting for around 60% of global GDP. Consumer food decisions make a significant effect on the food system, given the market demand for food that sometimes determines what food needs to be produced and in what ways.

Behavioural interventions made by the public and a civic society have traditionally been based on providing information to consumers as a key strategy to persuade the consumers to abandon their habits. Such interventions are very different from the approaches used in marketing and by the private sector that works on consumer preferences and cognitive trends to stimulate consumption. Consumers generally lack the interest and skill to use information in their decision-making and tend to rely heavily on their sensory signals and heuristics to make their choices.

Consumer behaviours could be changed through effective interventions, and this is an integral part of a wider shift towards sustainability. Consumer decision-making is influenced by a complex set of social norms and individual wishes and needs. It is subject to the chaotic activity of the human mind with unexpected triggers, associations and coded behaviours. This makes the work difficult, but not impossible.

Cognitive prejudice is a key feature that drives both individual and social behavioural processes. Effective intervention is one that exploits the prejudice rather than counteracts it. In the long term, behaviour could be determined through habits, infrastructure and social norms.

It should also be understood that at both the individual and the social levels, behaviour is an unsteady and dynamic phenomenon that will always change in nature. Directing action

towards any desired condition and maintaining it is a constant challenge that will require continuous and repeated interventions.

Therefore, it is important to assess and analyse the behavioural, cultural, historical, and traditional aspects of each society in order to be able to predict consumers' future expectations, which contributes to understanding the society's behaviour, decisions, preferences and possible actions regarding consumer choices.

4.3. Consumption and its place in the system of human values, the importance of which increases as consumption grows

Food and water are basic human needs. Every day a person needs to have a certain intake of nutrients and water. The cult of eating quality food, combined with the tradition of being together, is becoming increasingly popular today. Consumption changes significantly under various economic conditions. Between 1996 and 2008, the level of household consumption increased at the fastest rate since joining the EU in 2004, peaking in 2008. The increase in consumer spending was interrupted by the economic crisis when the economic resources of households decreased significantly in 2009 and 2010. From 2011 onwards, consumption expenditure gradually increased again, not reaching the level of 2008. From 1996 to 2014 (Centrālā Statistikas Pārvalde 2015), consumer spending at current prices increased 4.5-fold, which was largely due to both an increase in household incomes and a considerable rise in consumer prices. However, according to internationally comparable MBA data for 2010, average consumption expenditure per equivalent consumer in Latvia was only 30% of the average of the EU Member States. Not only the amount of consumption expenditure increased but also the composition of it changed, gradually approaching that of countries with higher living standards. By spending a relatively smaller share of income on food, individuals can meet more diverse consumption needs – they can spend more on recreation and culture, transport, as well as health and so on. Although the share of expenditure on food and non-alcoholic beverages decreased significantly (almost twofold) between 1996 and 2007, households still spent on food the most. Over the last five years, the share of food expenditure has stabilized and accounted for an average of 28% of total consumption expenditure. Eurostat data show that in 2010, Latvia spent on food 10 percentage points more than the EU-28 Member States did. The lowest share of food expenditure in 2010 was reported in Luxembourg (8.8%), the Netherlands (10.0) and Germany (11.6%) (Centrālā Statistikas Pārvalde 2015).

Sociological surveys showed that food consumption tended to decrease owing to an economic downturn. A 2009 study on the impact of the economic downturn on changes in food consumption found that almost 30% of the population had changed their food consumption habits. Of the respondents, 35% indicated that they had started consuming food less, yet the population spent the most money from the total household budget on food. In recent years, consumers have preferred to consume higher quality food, even though quality food is more expensive. However, the global situation is ambiguous. In recent years, growing amounts of food waste have been a growing problem for a food cult in rich countries, while people in poor countries have been starving.

To reduce the global economic impact on consumption, steady and adequate incomes for all actors of the food supply chain are needed to achieve sustainable and stable future investment in agri-environmental technologies and climate-friendly techniques. A sustainable, healthy, fair and climate-friendly food system that fosters cooperation and mutual understanding between all stakeholders involved in the food supply chain requires providing a better coherence between and the integration of food-related policy objectives and instruments (e.g. agriculture, environment, health, climate, employment and other areas) while taking into account the pillars of sustainability (ESOV 2016).

A transition to more sustainable food systems (in which people prefer more and better foods) encompassing all stages from production to consumption is greatly needed – producers need to grow more food while reducing the environmental impact, while consumers must be encouraged to shift to nutritious and healthy diets with a lower carbon footprint. The Corporate Social Responsibility Movement is also encouraging people to move towards environmentally friendly living by reducing the human footprint in nature. At the same time, the European Union also makes a political effort to achieve the United Nations Sustainable Development Goals (SDGs), as they provide a vital framework for joint action to ensure sustainable food for the world's people by 2030.

Sustainable food choices must be promoted by increasing their availability and accessibility to consumers. The consumption of sustainable food products should be encouraged by creating a stronger market demand, via green public procurement or other approaches. The European Economic and Social Committee calls on Member States to revise national dietary guidelines to reflect sustainability and to support food education in school curricula (Eiropas Ekonomikas…). The EU should also promote origin labelling, the development of labels that clearly convey the sustainability aspect of food products as well as EU-wide visual advertising campaigns for healthier food and diets. A good example of a sustainable, organic food system

is the one existing in the Scandinavian countries. Although organic food is significantly more expensive, there is a high level of social responsibility among the public, and preference is given to organic food originating from Scandinavia.

According to survey data on key factors in purchasing food and on sustainable food systems in Latvia, the food choices of the population are most influenced by the price, followed by the quality and price promotions. In recent years, however, consumers have increasingly preferred higher quality food, even though it was more expensive. Short supply chains (direct selling between the farmer and the consumer), farmers' markets and the slow food movement promoted by the Corporate Social Responsibility Movement are also developing rapidly. In the rural areas of Latvia, there are still strong traditions to cultivate gardens in order to partially provide oneself with food: vegetables, fruits and canned food that, in the public perception, are self-grown and organic. In this way, indirectly but traditionally, we have maintained the traditional system of sustainable food production at home. This system is becoming increasingly popular with the development of home production and farmers' markets. At the beginning of 2021, according to statistics (Kontroles institūcijās…), 4138 organic farms were registered, which accounted for 5% of the total farms. Most of the organic farms were engaged in grain, dairy, livestock and vegetable production. According to Eurostat data, the production of organic food of animal origin has increased tenfold in Latvia over the last five years.

Surveys of the public that prefer organic or home-produced food reveal that the public select sustainable foods based on micro-environmental factors, their individual understanding and their knowledge of organism needs and environmentally friendly consumption. It also includes the availability of food shops and certain foods close to the place of residence, information on the producers and the place of origin of food, as well as the public's skills to grow produce and cook for oneself. In addition, care for the family and its health was emphasized by the respondents. The public have built up awareness and knowledge of eco-labels, as well as environment- and health-friendly food.

4.4. Balancing the supply of and the demand for food in today's conditions

It is becoming increasingly important for the public to take care of their own health and the health of their relatives by including quality local foods of known origin in their daily diets. There are many small businesses that produce high-quality food. Food quality and safety have been and will be key drivers at global, regional and national levels. As the world's population

grows, sustainability problems and uneven income growth pose ongoing challenges for the food and agriculture sector concerning increasing overall food availability, meeting the growing diversification of the consumer basket and meeting higher quality standards while keeping food affordable.

Global food production is growing, yet the growth rates and patterns of agricultural development vary considerably around the world. Exceeding natural constraints, the differences reflect different economic and structural reforms as well as marketing strategies, which play a crucial role in the development of food production and food availability.

Both production and trade can help to address the mentioned challenges: on the supply side, it is necessary to increase total production in such a way as to make food accessible, varied and easily accessible to everyone; on the demand side, it is necessary to meet quality and new societal standards in the field of climate and environmental protection (socially responsible and sustainable living). However, we should not forget the productivity factor. Sellers need to focus on seasonality as well as promote specialization where it is the most efficient.

Over the last 19 years, the diets have become more diverse. In 1996, foods such as bread, milk, sugar and potatoes were mainly consumed, yet with household buying power increasing and market supply broadening in scope, the diets were diversified with poultry, cheese, yoghurt, citrus, pumpkin and pulses, as well as mineral water and lemonade. In 2014, the consumption of wheat, rye and other kinds of bread per household member was on average two times lower than in 1996. During the global economic crisis, households decreased the consumption of certain fruits and vegetables, as well as confectionery, which was offset by the consumption of cheaper food products. Overall, the consumption of most food products did not increase even in the post-crisis period (CSB 2015). Households with higher incomes, however, have a greater variety of foods in their daily diets, and the effect of the crisis on their food choices was less pronounced (Kontroles institūcijās…).

In recent years, the share of individual direct deliveries in food retail has increased. This is due to the changing consumer tradition of increasingly preferring locally sourced foods with higher value added. Organic foods and home-produced products, which are valued by consumers as higher quality products, are becoming more in demand.

Although consumers spend a significant share of their incomes on food, approximately 33% (CSB 2015), there should be taken into account the fact that food retail turnover might also decrease significantly, mostly in times of crisis when the buying power of the population decreases. As a result, the demand for cheaper basic necessities can increase rapidly. However,

an increase in the income level promotes the growth of consumption – both the amounts of food purchased and the quality requirements for food increase.

Overall, an economic assessment of food consumption and eating habits takes into account the aspects of supply and demand, as well as the relationship between producers and consumers.

With the development of IT technologies and the Internet as well as the acquisition of new skills by consumers, the consumers increasing tend to buy goods remotely or via e-commerce platforms. The problems in the global economy caused by the COVID-19 pandemic have rapidly accelerated the digitalization of society and the economy, according to World Trade Organization analysts. Therefore, the ability to change rapidly and adapt to the "digital regime" is especially important for the development of small traders and producers, as a lot of the public do shopping online. The new trend increases demand, as consumers can buy online, on the farm and at the producer.

One of the segments in which an increase in online shopping is evident worldwide is food sales. Latvia is no exception in this respect either, and many market participants – from small farms to large companies – have responded to the increase in demand. A new trend has emerged – home delivery of food. The offers are various: foods from farms, small producers and large shops, as well as ready-made dishes from restaurants and cafes. In the past, online shopping mainly involved electrical goods and household appliances, yet now food trade is expanding fast. This provides an opportunity to actively develop sustainable food supply systems by making locally available, high-quality food increasingly accessible to the public. Under the current circumstances, home-producer cooperatives, direct buying groups, various online shopping platforms and other innovations also help consumers to find and buy their products.

Consumers, however, shop online because it is convenient for them. Delivery speed is also important, so customers appreciate same-day delivery. The popularity of online shopping grows every year. One of the reasons why people increasingly prefer to buy groceries online is the fast pace of life. The research data show that almost half of the population of Latvia (49%) rated their knowledge of safe online shopping as good. One third of the respondents (33%) indicated that their knowledge was mediocre, while 13% rated it as poor. Presumably, such concerns are one of the reasons why some buyers are still reluctant to try this option, which can save not only money but also time. One in five (20%) respondents revealed that they shopped online less than once a month, while 31% a few times a year or less; 11% respondents did not shop online at all (Gemius 2019).

Both the Latvian and Lithuanian Internet users surveyed were most often motivated to shop online by lower prices than those in traditional shops. This was indicated as a motivator by 71% respondents in Latvia and 67% respondents in Lithuania. As regards the most important factors that encouraged online shopping, the respondents in Latvia more often mentioned that online shops were always open and it was easier to compare products or services, while Lithuanian Internet users indicated that important motivators were discounts and special offers, as well as home delivery (Gemius 2020).

Given the latest consumer trends in online shopping, growing consumer demands for product diversity, quality and locally sourced products, manufacturers, home producers and retailers give the opportunity to balance the demand and the supply to meet consumer needs through the latest technological trends in distance selling.

4.5. Objective and subjective causes and consequences of the increase in the demand for home-produced food

The European agricultural landscape is dominated by small farms (farms, home producers, organic farmers), yet they are much less represented in agricultural decision-making bodies than large farms. The weak political representation of small farms reduces the extent to which their needs are addressed in national agricultural policies and support measures. This underrepresentation has limited the contribution of small farms to food and nutrition security and sustainability. The experience of countries around the world has showed that direct stimuli to private consumption without appropriate competitiveness-raising measures and reforms, after illusory short-term benefits, exacerbate imbalances and do not contribute to sustainable development.

To promote the sustainable production of quality food products through supporting small farms and home producers, a government-established system is needed for this purpose. Organic farming is one of the supported systems that is regulated by regulatory enactments. Organic farming is a fast-growing industry of EU agriculture, which a direct result of the growing consumer interest in organic products. In response to the challenges posed by the fast growth of organic farming and in order to provide an effective regulatory framework for this industry, the EU has adopted regulatory enactments (https://ec.europa.eu) that are directly applicable in all Member States of the European Union.

In order for farmers to benefit from applying organic farming techniques, consumers should have confidence that the rules of organic production are being complied with. That is why the EU maintains such a strong control and enforcement system to ensure that the rules and requirements for organic products are properly complied with. Since organic farming is part of a larger supply chain covering the food processing, distribution and retail industries, the industries are also subject to inspections by the responsible authorities. Producers, distributors and retailers of organic products must register with the local control authority before they are allowed to market their food as organic. Only after the companies have been inspected, a certificate confirming that their products meet organic standards is issued.

Imported organic food is also subject to control procedures to ensure that it is also produced and delivered in accordance with organic principles.

Due to the strict control of organic production, the level of consumer confidence that organic food is of higher quality is high. In addition, relevant EU legislation has been adopted to protect organic products against counterfeiting. Such national action and protection mechanisms are objective reasons affecting consumer confidence in the given category of foods. As a result, the popularity and demand for organic food tends to slowly but steadily increase.

At present, however, there is no official definition of home producer activity in Latvia. Home production as an industry of the economy is in the process of development. This applies both to the relevant legislation and to cooperation among small producers and the availability of products to consumers. A home producer produces food at home. A home producer uses its own grown inputs for processing or cooperates with other Latvian farms in purchasing such inputs. A responsible and sustainable approach is applied in agricultural production. This means that the inputs are grown in an environmentally friendly way and the products are produced in accordance with good hygiene practices as well as local traditions in the region. As a result, consumers are offered healthy local food. Such traditional values build up consumer confidence in the long term, although the industry is not strictly regulated by the national legislation. However, for the development of the home production industry, home producers unite in associations and cooperatives, take active part in activities to promote the high quality of home-produced products and promote the growth of consumption by meeting the needs of the public.

A change in public thinking could be mentioned as a subjective factor influencing consumer demand for home-produced food. Factors such as wellbeing, health, and a clean environment are increasingly important to the public. Social values change, so do consumers' daily habits and choices. There is a growing demand for locally sourced food, while the demand for

and the popularity of home-produced food in particular increases the most. The change in consumer thinking is also influenced by the emergence of socially responsible movements, the individual becomes more responsible and tries to pollute the environment less, live greener, eat healthier and try to do as little damage to nature as possible. Changes in consumer habits regarding food choices can be seen particularly well in local farmers' and home producers' markets, where home production is in high demand.

4.6. Prospects for maintaining the diversity of the national food market in the conditions of climate change, technological development and human transformation

The current food system (production, transport, processing, packaging, storage, retail, consumption, losses and waste) sustains most of the world's population and generates livelihoods for more than 1 billion people. Since 1961, per capita food supply has increased by more than 30%, in addition to the application of nitrogen fertilizers (an increase of about 800%) and water resources for irrigation (an increase of more than 100%). However, it is estimated that 821 million people are currently malnourished, 151 million children under the age of five are starving, 613 million women and girls aged 15–49 suffer from iron deficiency and 2 billion adults are overweight or obese. The food system is exposed to non-climate stress factors (such as population and income growth, demand for animal products) and climate change. These climatic and climate-related conditions affect the four pillars of food security (food availability, food access, food utilization and stability) (The Intergovernmental Panel on Climate Change 2020).

The key factors that are expected to affect food consumption in the future are as follows:

- climate change and the environment,
- demographic processes,
- lifestyles and diets,
- innovations and technologies,
- governance.

The mentioned five drivers of change are the result of a compilation of results from 19 global studies in which the authors analysed the aspects that are going to contribute to food system change in the future.

Climate change and the environment. Because of climate and environmental change, there are global threats that can affect the world's population. As a result of the global threats, the sixth mass extinction in the world is a very real risk. Extreme temperature fluctuations caused by climate change, water unavailability, floods, rising sea levels will affect all spheres of life. This creates unpredictability in all spheres of life and challenges us to start balancing today's and tomorrow's needs now. In the future, a big challenge is to find a balance between the price of the product and its impact on the environment. We need to start developing new business models, simulating the ways how to commercialize biodiversity – strengthen its multifunctionality and circularity – as well as start using the latest technologies – both high-tech and low-tech. Green technologies are already being introduced that reduce carbon emissions, adapting lifestyles as much as possible while creating no waste and pollution.

Demographic processes. Globally, the population continues to grow. Unlike many countries, the population of Latvia continues to decline. The trend of urbanization can be observed all over the world, also in Latvia. In rural areas, the decline in the population is much more significant than that in cities, the population move to cities. Another trend is observed in the world – the society is aging and the average age of the world's population, including Latvia, is increasing rapidly.

Lifestyles and daily diets. Eating habits are changing. New kinds of diet are gaining popularity. A healthy, active lifestyle is becoming increasingly important for consumers, along with having a balanced daily diet. In addition, consumer demands for food quality are increasing. Globally, responsible consumption is becoming increasingly important. Personal associations with food are shaped by interpretations created by marketing. Health and safety are the focus of the political debate.

Innovations and technologies. The main expectations relate to industry. The public expects industry to introduce new technologies and innovations in production processes that can reduce the impact on the environment. Large companies in the agri-food sector compete for data because, as it is known, information about consumer preferences can change production fast to meet rapidly changing consumer needs. Targeted investments will focus on bridging the digital divide and avoiding the side effects of digitalization.

Digitalization creates new opportunities for everyone. Digital skills are invaluable. Even now when the world is affected by the pandemic, digitalization has taken on a new shape and a lot of individuals need to improve and acquire new digital skills. Successful farms will make

extensive use of digital tools in the future. However, technologies limit opportunities for development. Future investments need to be technologically aligned with previous ones. There will be a constant fight against the side effects of digitalization in the future.

There are already a number of good examples of companies successfully overcoming challenges that everyone may need to address in the future. The positive factor is that we can predict the future based on research, we can prepare for it and, if we do the right thing, we can steer it in the direction we want (for example, by eliminating potential negative factors that can affect food systems). We are still living in a time when the future is uncertain and unclear and will come sooner than we believe. We will be forced to face challenges that we find difficult to imagine at the moment. Most of us are not methodologically ready (prepared) to think about the future in a structured (organized) way. False assumptions give us a false sense of security. One should think systematically about global processes (in Latvia and in the world) and interact with them. The world has become faster and more unpredictable.

Gender role differences tend to decrease not only in the daily lives, habits, perceptions, responsibilities and rights of individuals but also in the purchase and choices of food. Historically, for hundreds of years, a man has been perceived as an income provider playing a secondary role as a food buyer, while the role of a woman has always been the keeper of the family home who was responsible for purchasing, preparing and serving food to the man and children. Nowadays, as lifestyles, life rhythms and habits change and women play an increasingly important role in earning more equivalent incomes, the role of men in everyday household responsibilities also increases, and an increasing number of men are involved in choosing and supplying food. This means that the values and criteria that are important for a man in choosing food are also taken into account and are going to become part of a normal daily routine. In view of this fact, it is important to analyse food choices from a gender perspective in order to be able to identify key factors in food choices today – both for women and men. After examining this aspect, it is possible to simulate and predict future trends and criteria that could influence food choices by both women and men in the future.

4.7. The European Green Deal or policy trends in the European Union regarding home-produced food and the implementation of the "From Farm to Fork" system

The European Green Deal (European Commission…, 2019) is our guide to making the European Union's economy sustainable. This will be achieved by turning climate and environmental challenges into opportunities in any area of policy making and ensuring that changes are fair and inclusive for all individuals. The European Green Deal is the basis for the European Commission's strategy designed to achieve the targets set by the United Nations 2030 Agenda for Sustainable Development. The agenda sets out activities that should be carried out by all countries in order for the world to reach a higher level of prosperity through poverty reduction and sustainable development by 2030. The agenda was designed based on development goals adopted in 2000. Globally, it is the first document that highlights a universal call to action, including 17 sustainable development goals (ANO Ilgtspējīgas…) and 169 sub-targets.

Fig.6. United Nations Sustainable Development Goals

Source: (ANO Ilgtspējīgas…).

There are several United Nations Sustainable Development Goals pertaining to food and food production, namely Goal 2: end hunger, achieve food security and improved nutrition and

promote sustainable agriculture; Goal 12: ensure sustainable consumption and production patterns and some subordinate ones: Goal 5: achieve gender equality and empower all women and girls; Goal 6: ensure availability and sustainable management of water and sanitation for all; Goal 10: reduce inequality within and among countries; Goal 14: conserve and sustainably use the oceans, seas and marine resources for sustainable development; and Goal 15: protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

In order for Europe to show its willingness to play an active role and take action to achieve the goal of the European Green Deal, the European Commission has prepared a Communication to the European Council, the Parliament, the European Economic and Social Committee and the Committee of the Regions (2020) that formally adopted the European Green Deal for all European citizens and policy makers.

It repeatedly focuses on future trends that are expected to be important for the development of both this and the next generation in order to make a sustainable environment for themselves and future generations. As a result of current activities, the environment is becoming more polluted every year, the climate is warming and many species are threatened with extinction. The European Green Deal policy aims to reduce and solve the mentioned problems by promoting the development of a new sustainable environment.

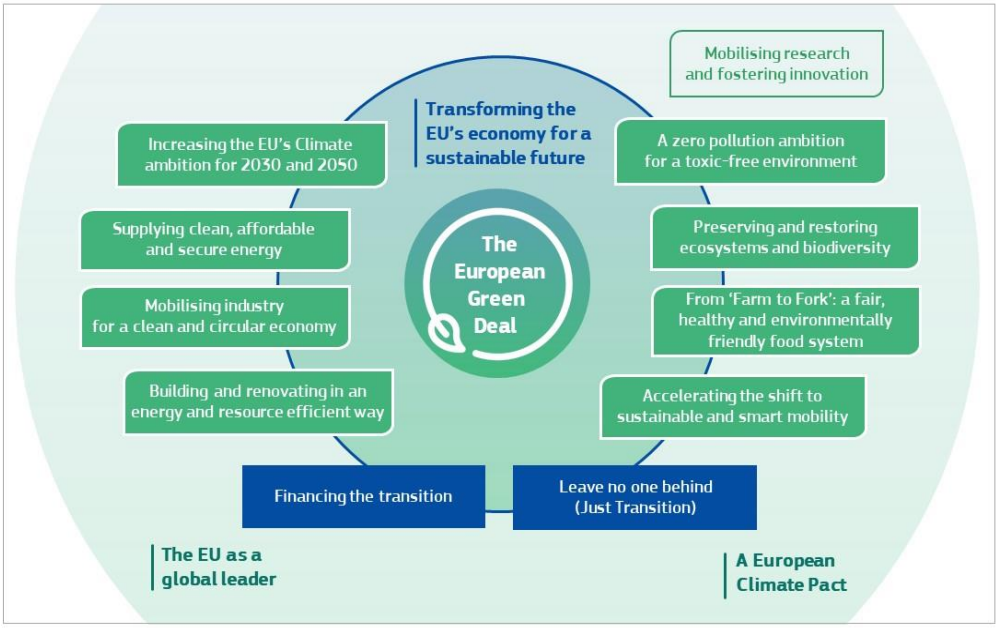

Fig.7. European Green Deal

Source: (Communication from the Commission…, 2019).

Section 2.1.6 (Komisijas Paziņojums…) of the European Commission's Communication on the European Green Deal – From "Farm to Fork" (Communication from the Commission…, 2020): designing a fair, healthy and environmentally-friendly food system – states that European food is famous for being safe, nutritious and of high quality. It should now also become the global standard for sustainability. Although the transition to more sustainable systems has started, feeding a fast-growing world population remains a challenge with current production patterns. Food production still results in air, water and soil pollution, contributes to the loss of biodiversity and climate change, and consumes excessive amounts of natural resources, while an important part of food is wasted. At the same time, low quality diets contribute to obesity and diseases such as cancer.

There are new opportunities for all operators in the food value chain. New technologies and scientific discoveries, combined with increasing public awareness and demand for sustainable food, will benefit all stakeholders. The Commission presented the 'Farm to Fork' Strategy in spring 2020 and launched a broad stakeholder debate covering all the stages of the food chain, and paving the way to formulating a more sustainable food policy (European Commission's Communication..., 2020).

European farmers and fishermen are key to managing the transition. The Farm to Fork Strategy will strengthen their efforts to tackle climate change, protect the environment and preserve biodiversity. The common agricultural and common fisheries policies will remain key tools to support these efforts while ensuring a decent living for farmers, fishermen and their families.

The Commission will work with the European Parliament and the Council to achieve at least this level of ambition in the proposals. Given that the start of the revised Common Agricultural Policy is likely to be delayed to the beginning of 2022, the Commission will work with the Member States and stakeholders to ensure that from the outset the national strategic plans for agriculture fully reflect the ambition of the Green Deal and the Farm to Fork Strategy. The Commission will ensure that these strategic plans are assessed against robust climate and environmental criteria. These plans should lead to the use of sustainable practices, such as precision agriculture, organic farming, agro-ecology, agro-forestry and stricter animal welfare standards. By shifting the focus from compliance to performance, measures such as eco-schemes should reward farmers for improved environmental and climate performance, including managing and storing carbon in the soil, and improved nutrient management to improve water quality and

reduce emissions. The Commission will work with the Member States to develop the potential of sustainable seafood as a source of low-carbon food.

The strategic plans will need to reflect an increased level of ambition to reduce significantly the use and risk of chemical pesticides, as well as the use of fertilisers and antibiotics. The Commission will identify the measures, including legislative, needed to bring about these reductions based on a stakeholder dialogue. The area under organic farming will also need to increase in Europe. The EU needs to develop innovative ways to protect harvests from pests and diseases and to consider the potential role of new innovative techniques to improve the sustainability of the food system, while ensuring that they are safe.

The Farm to Fork Strategy will also contribute to achieving a circular economy. It will aim to reduce the environmental impact of the food processing and retail sectors by taking action on transport, storage, packaging and food waste. This will include actions to combat food fraud, including strengthening enforcement and investigative capacity at EU level, and to launch a process to identify new innovative food and feed products, such as seafood based on algae.

Lastly, the Farm to Fork Strategy will strive to stimulate sustainable food consumption and promote affordable healthy food for all. Imported food that does not comply with relevant EU environmental standards is not allowed on EU markets. The Commission will propose actions to help consumers choose healthy and sustainable diets and reduce food waste. The Commission will explore new ways to give consumers better information, including by digital means, on details such as where the food comes from, its nutritional value, and its environmental footprint. The Farm to Fork strategy will also contain proposals to improve the position of farmers in the value chain.

In 2020, the European Commission developed a new policy – the Strategy "From Farm to Table", which is a cornerstone for introducing a fair, healthy and environmentally friendly food system (Komisijas Paziņojums…), which involves:

- achieving at least a neutral or positive impact on the environment;
- mitigating climate change and adapting to current environmental changes;
- stopping the loss of biodiversity;
- achieving food security and improved nutrition and promoting public health through achieving the UN goal of ensuring that everyone in the world has access to the food they need through sustainable food systems;

– maintaining access to food and creating a fair economic environment, promoting fair trade and developing the competitiveness of the European Union.

4.8. Habits of consumers of organic and home production food products

4.8.1. Methods and information sources

Although the same basic phenomena and processes are developing in the world as a whole, in various parts of the world and also in the countries that make them up, the phenomena and processes gain some difference, even specifics.

There have been analysed in depth the manifestations of the phenomena and basic processes in two Baltic neighbouring countries – Latvia and Lithuania –, which are characterized by close cooperation, common interests in the Baltic Sea region and strategic political partnership within the European Union, NATO and other international forums. In addition, successful practical cooperation has been established between the parliaments, ministries, local governments and non-governmental organizations of Latvia and Lithuania, which creates a positive ground for further cooperation. Latvia and Lithuania are closely united by belonging to European culture and a similar history in recent centuries.

The natural environments of Latvia and Lithuania are quite similar. The terrain of the countries is fairly flat, with no mountains; therefore, the land areas of both countries are suitable for agriculture (57% in Lithuania, 39% in Latvia) and forests (30% in Lithuania, 45% in Latvia). The natural resources suitable for the development of agriculture and the historical lifestyle of both Baltic nations are what form the basis of their modern culture, traditions and customs both at the national level and at the level of family and kin.

In recent decades, as the level of prosperity has increased, consumer demands for quick and easy access to ready-made and light foods that are mostly bought in shops, with minimal effort to prepare a daily meal, have increased. This trend began to emerge rapidly at the end of the 20th century with the appearance of imported goods in the Baltic markets when so far the "Soviet man" had seen little of brightly packed goods and semi-finished foods that could be quickly prepared for a meal. In addition, with the collapse of the USSR (Union of Soviet Socialist Republics) and collective farms, people from rural areas began to move to cities where

they had greater job opportunities. This, in turn, contributed to the abandonment of rural lifestyle in which vegetables, fruits and meat were self-produced and winter food stocks were prepared, replacing them with ready-to-eat food purchased in supermarkets.

In recent years, however, both in Latvia and Lithuania, people have a desire to use "home" and "home-produced", maximally fresh and self-made products in their daily diet, which are now widely offered by home producers and farmers. Both in Latvia and Lithuania, home producer movements and associations and cooperatives emerge, which help consumers to buy as fresh food as possible from the local area, establishing almost personal relationships with both the farmer and the home producer who has produced the food. This promotes both personal trust and increases the value added and quality of food as well as contributes to the preservation of cultural and traditional heritage in everyday life.

A survey of the population whose representatives were interested in organic products and home production was conducted to identify the opinions of the population on the mentioned problems. The aim of the survey was to obtain information on the habits of such consumers regarding the food consumed at home. The survey was conducted in Latvia, in Zemgale region, at home producers who serviced tourists and provided tasting services. To facilitate data collection and obtain information from international tourists, the questionnaire was prepared in three languages: Latvian, Lithuanian and English. The questionnaires were identical in all the languages. The survey was conducted from June to September 2020. A total of 361 respondents were involved, of whom 235 (65%) were from Lithuania, while 126 (35%) were from Latvia, representing both genders (60.4% women and 39.6% men in Lithuania; 65.9% women and 34.1% men in Latvia). Tourism services were provided nationwide during the COVID-19 pandemic. The Latvian respondents represented the capital Riga and the regions of Pieriga, Zemgale, Kurzeme and Vidzeme. Since most of the visitors to home producers and craftsmen were residents of Latvia and Lithuania, the opinions of Latvian and Lithuanian respondents from both the national and the gender perspective were selected for analysis and comparison. The composition of the respondents has several positive features:

- first, the respondents actually represented the part of the public that was practically associated with home producers and craftsmen;
- second, the respondents were representatives of both genders, which allowed determine whether a respondent's gender influenced his/her attitude towards the same phenomenon relevant under today's circumstances;

– third, the opinions were expressed during the COVID-19 pandemic and therefore not only described the current situation but also outlined the aspirations for the future.

Statistical data from both countries were used to compare and assess the socio-economic situation in Latvia and Lithuania (Central Statistical Bureau 2017).

4.8.2. Research results and discussion

The information obtained by the survey and its content analysis provide an opportunity to identify the most characteristic features of behaviour of domestic product consumers in the current conditions and forecast prospects from both the supply and the demand sides.

4.8.2.1. Consumption and characteristics of home-produced products

The aim of the survey was to find out the daily consumption habits of consumers regarding home-produced food. The answers provided by the respondents in the survey indicated that almost all the respondents gladly included home-produced foods in their daily diets – 82% in Latvia and 96% in Lithuania. Since 14% Latvian respondents did not provide an answer to this question, it was very likely that there was a larger number of persons who included home-produced foods in their daily diets.

An analysis of how often the foods produced by home producers were included in the diet revealed that most of the respondents consumed such foods once or several times a week or several times a month (Figure 8).

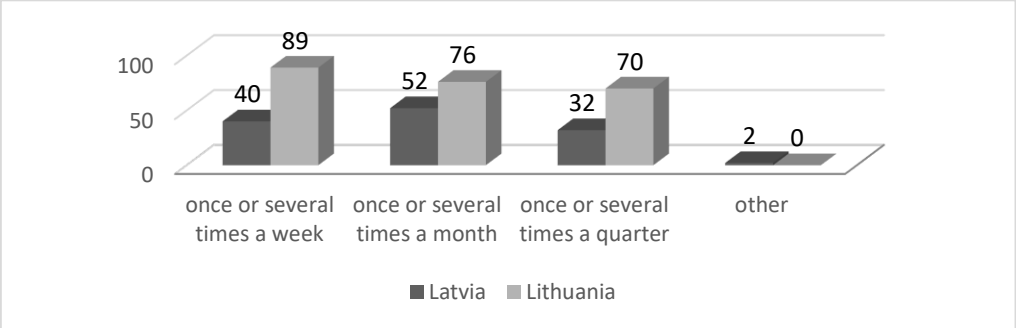

Fig.8. Breakdown of the respondent answers regarding the frequency of consumption of home-produced foods

Source: Own research.

This indicates that it is important and significant for the consumer to include home-produced foods in the daily diet and that such foods have become an integral part of the daily diet.

4.8.2.2. The main home-produced foods included in the daily diet and the basic criteria for their selection

An analysis of the answers of the respondents regarding home-produced foods included in their daily diets (Figure 9) revealed that the most popular choice among Latvian respondents was honey and other bee products 51%, followed by meat (both fresh and various meat products) 39%, bread and other bakery products 37%, as well as fresh fruit and vegetables 37% and fresh chicken eggs 35%. Among Lithuanian respondents, the most popular choices were honey and other bee products 74% and fresh chicken eggs 73%, bread and other bakery products 65% and meat and meat products 63%. An interesting fact is that neither for Latvian nor for Lithuanian respondents, milk and dairy products were among the most popular choices, indicating that only 33% Latvian and 50% Lithuanian respondents included milk and dairy products produced by home producers in their daily diets.

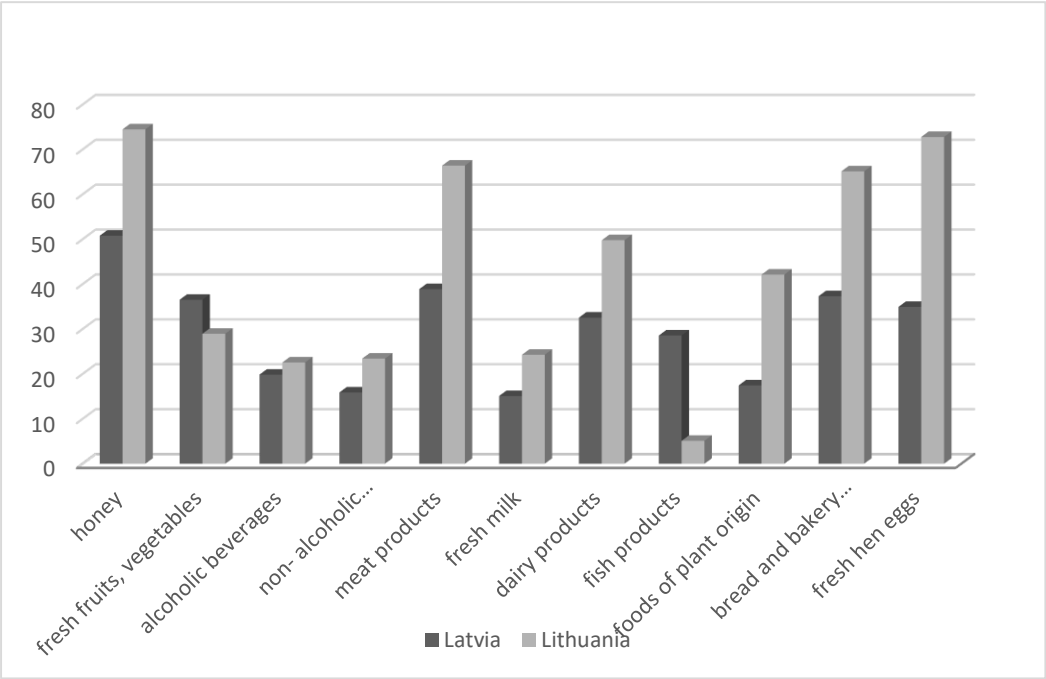

Fig. 9. Breakdown of the respondent answers regarding everyday foods consumed, in %

Source: Own research.

An analysis of the answers to the question of what are the key criteria for choosing home-produced foods revealed that the main answer in the groups of representatives of both countries was food quality – 53% in Latvia and 84% in Lithuania (Figure 10). The second important criterion was that the food was produced at home, and no less important was the taste, smell and other organoleptic characteristics of the food.

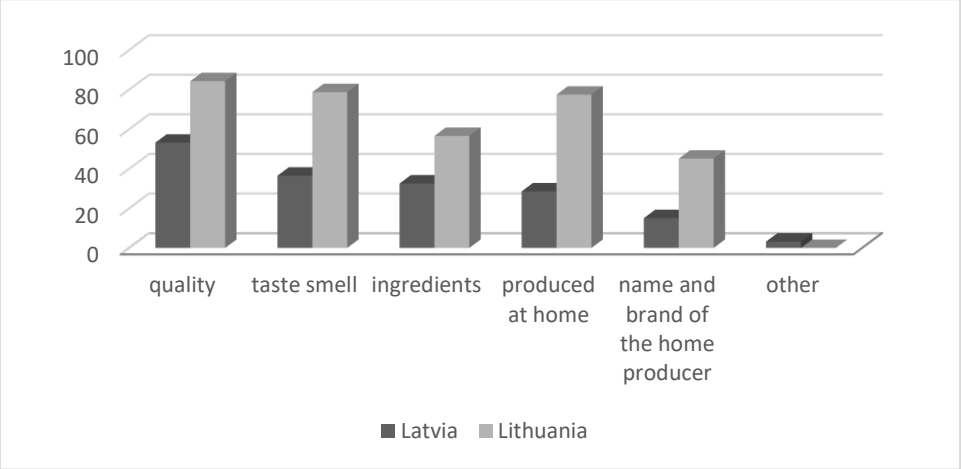

Fig.10. Breakdown of the respondent answers by key criteria for choosing home-produced foods, in %

Source: Own research.

The name or brand of the home producer could be mentioned as an insignificant factor for the respondents from both countries in choosing a certain category of food.

Such consumer answers could be explained by the cultural and traditional heritage of the Baltic States, which includes agricultural traditions and rural life experience that could be associated with good food and prepared food quality as well as taste and smell nuances, regardless of the producer's name or brand. In addition, this is implicitly confirmed by the respondents' answers to the question whether it is important that the food is produced at home. The respondents pointed out that it was important that the food was produced at home (46% Latvian and 48% Lithuanian respondents), yet almost the same number of the respondents answered that this factor was not always important (42% Latvian and 41% Lithuanian respondents); this factor was not important for 12% Latvian and 11% Lithuanian respondents. Accordingly, it could be concluded that the quality of the product as well as its taste and aroma properties are the determining factor associated with the fact of production of the home-produced food and not with a particular brand or name.

4.8.2.3. Variations of places for purchasing home-produced food

However, the respondents pointed out that it was very important that foods produced by home producers were distributed in the market of Latvia, which was a very important and unequivocally significant factor. This factor was important for 100% Latvian tourists surveyed. In contrast, among Lithuanian tourists, this factor is important only for 77% respondents. The answers given by the Lithuanian respondents could be explained by the fact that for them the market of Latvia and the food produced by home producers and available on this market daily were not as important as for local (Latvian) consumers.

An analysis of the habits and traditions of consumers in relation to buying food produced by home producers revealed that the most Latvian respondents preferred to buy such food during off-site sales (43%), at the marketplace (36%), directly from the producer (34%) and during tourist trips to home producers (34%). Unlike the Latvian respondents, the most popular way for the Lithuanian respondents to purchase home-produced food was tourism trips to home producers (53%), followed by off-site sales (31%) and purchasing products directly from the producer (28%) and at municipality-organized fairs (23%) (Figure 11).

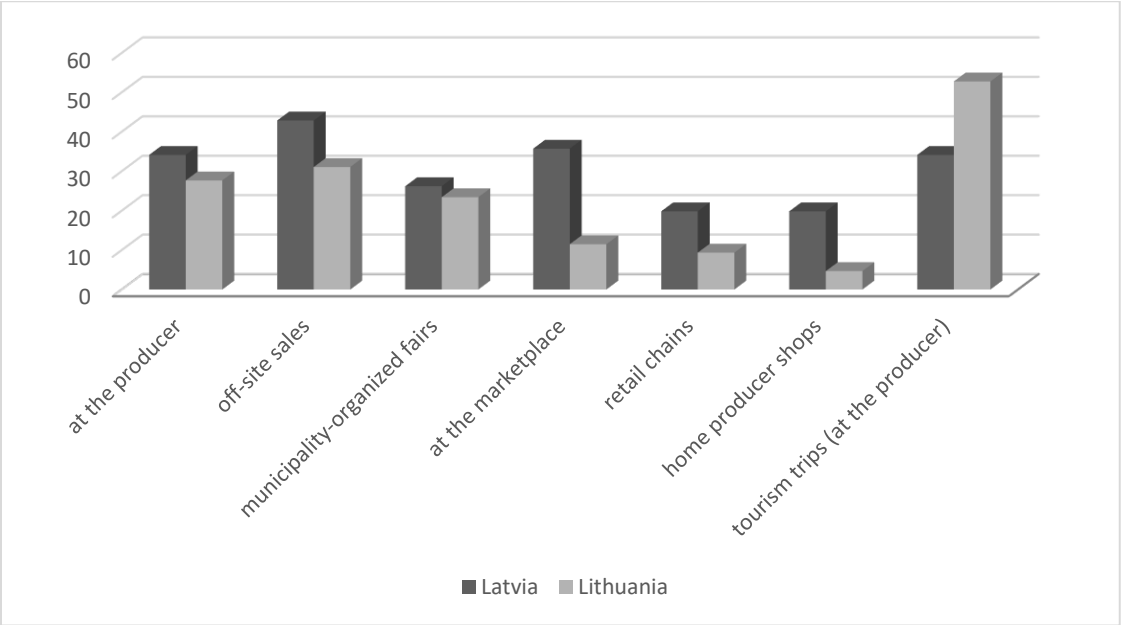

Fig. 11. Breakdown of the respondent answers regarding their habits to buy food produced by home producers, in %

Source: Own research.

The data obtained show that in view of the habits of consumers to buy food produced by home producers, it is necessary to develop and popularize off-site sales, as well as there is large potential for popularizing home producer products through tourism services provided by

them. In this way, Latvian home producers have an opportunity to simultaneously popularize their products as an extra value of tourism in Latvia. The survey data showed that this kind of tourism was especially popular among the Lithuanian respondents. In the future, to examine this aspect, it would be useful to conduct an equivalent survey among tourists from other countries too in order to identify not only the trends regarding Lithuanian tourists but also to have data from the whole Baltic and Northern European region. According to the survey data, 90% Latvian and 83% Lithuanian respondents were very happy to visit home producers – 84% Latvian respondents and 87% Lithuanian respondents who visited home producers were positive about their visits. In addition, 100% Latvian respondents confirmed that they knew some home producer in their regions, while an additional 43% indicated that they also knew home producers in another region. Among the Lithuanian respondents, only 54% indicated that they knew some home producer in their regions, while 46% also knew a home producer in another region.

According to the survey data, the respondents of both countries liked the kind of tourism that allowed them to visit home producers, thereby making the consumers satisfied. This is another positive aspect that leads to a conclusion that home producers have both the potential for tourism and the potential to further promote their products and meet the market demand. However, there is still a need to increase the visibility of home producers and make information about them more accessible, especially to foreign tourists.

According to the survey data, only 65% Latvian respondents and 52% Lithuanian respondents indicated that the available information on Latvian domestic producers and their products was sufficiently extensive, reliable and unbiased, and exactly the same number of respondents from both countries confirmed that information about Latvian home production companies was easily accessible. This means that it is necessary to advertise home producers and make information about their products more accessible by seeking various solutions and ways.

This was also indicated by the respondents' answers to the question about the availability of products of Latvian home producers in the market. Only 31% Lithuanian respondents confirmed the fact that such products were easily available on the market of Latvia, while 30% answered that the products were not easily available and 38% answered that they did not know where the products produced by Latvian home producers were available on the market of Latvia. An analysis of the Latvian respondents' answers revealed that 56% respondents confirmed the fact that home producer products were easily available on the market of Latvia, while 26% indicated that they were not easily available and 18% did not know about the availability of such products on the market. An analysis of the answers of the respondents about the availability of home producer products allows stating that the domestic market was better known by

local residents, which is natural, yet there was still potential and a need to develop information about home producers, their products and the availability of their products in the market of Latvia.

Analysing the results of the survey on the places of purchase of products in Latvia, it had to be concluded that the producer most often buys fresh milk, plant products and bakery products. During the mass events, honey, plant products, meat products, dairy products, fish products and fresh eggs, as well as alcoholic beverages were most often purchased during mass events (Figure 12). All products are bought on the market, but most often honey, bread, meat and dairy products. An important role is played by products sold to the home producer during tourism, where plant products, dairy products and meat products were more often purchased.

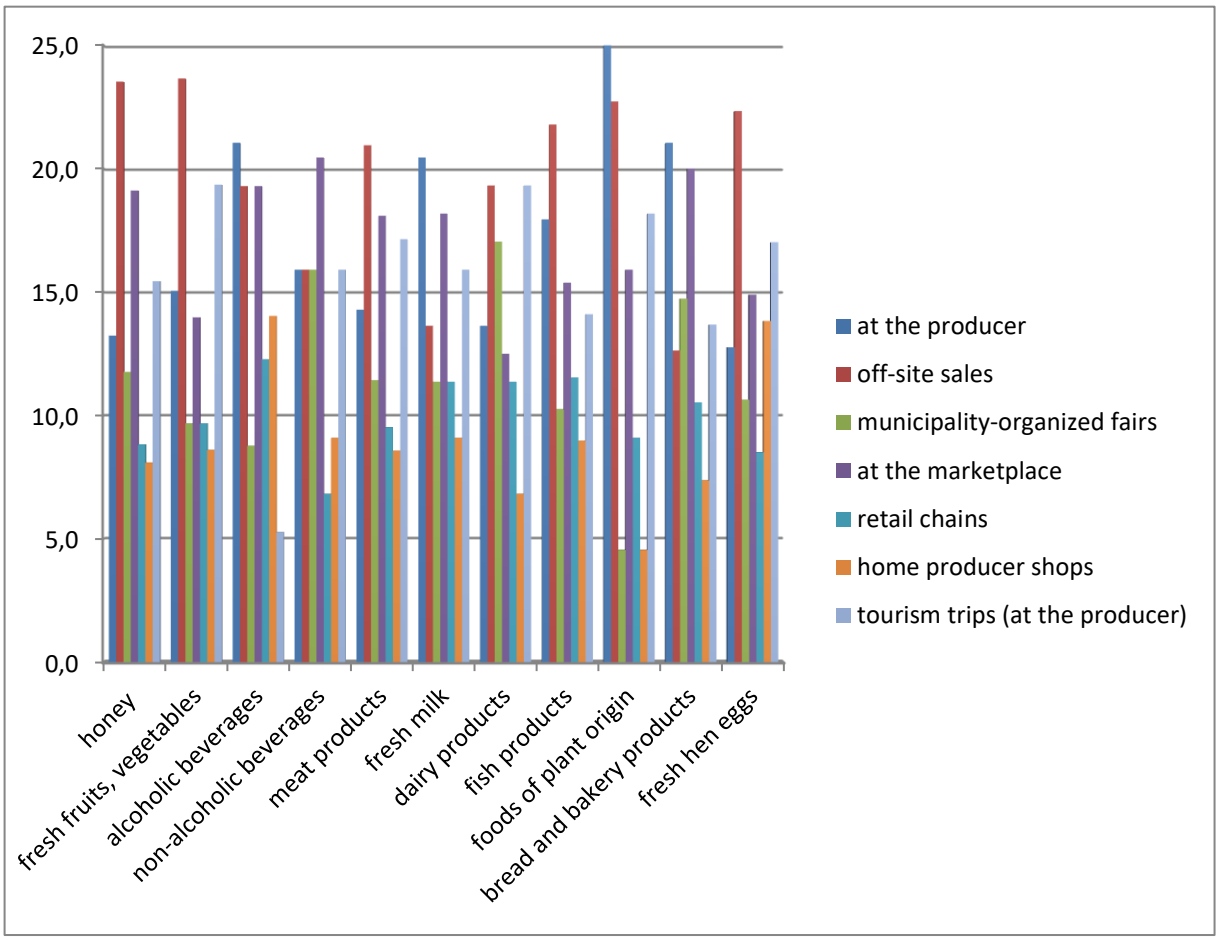

Fig. 12. Breakdown of the respondent answers regarding their habits to buy food produced by Latvian home producers in different points of sale, in %

Source: Own research.

In Lithuania, on the other hand, there are slight differences. All products were most often purchased during a tourist trip to a home producer (Figure 13). The next most popular

place to buy all products is sales during mass events. In third place is the trade from the producer, also based on all products, but most often fish products and fresh eggs.

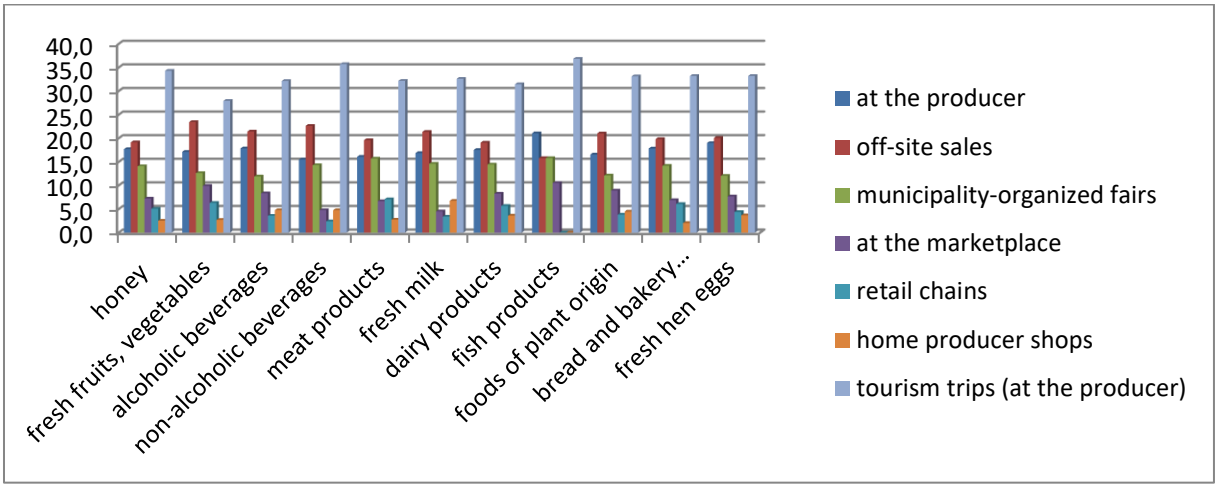

Fig.13. Breakdown of the respondent answers regarding their habits to buy food produced by Lithuanian home producers in different points of sale, in %

Source: Own research.

4.8.2.4. Sources of information on home producer products

An analysis of the respondents' answers regarding how and from what information sources the respondents obtained information on tourism services provided by Latvian home producers and about their products revealed that the most popular source of information among the Latvian (48%) and Lithuanian (32%) respondents was the Internet, followed by friends and acquaintances – 44% in Latvia and 28% in Lithuania, while the third most popular source was social media – 37% in Latvia and 27% in Lithuania (Figure 14).

This means that the greatest attention and action regarding promoting home-produced products and dealing with their accessibility problems should be focused on modern sources of information such as the Internet and social media.

For several years now, Latvian home producers have had an opportunity to post information about their enterprises on the Rural Traveller website. According to the respondents' answers about searching for information on the Rural Traveller website, only 29% Latvian respondents and 30% Lithuanian respondents used this opportunity, while the majority – 44%

Latvian respondents and 40% Lithuanians – indicated that they did not know about such a website. This means that the information available on only one website is insufficient and that home producers would need to consider ideas of making it more accessible as well as developing quality business websites in several languages, thereby making the information available not only to Latvians but also foreign tourists. In addition, in today's era of technology, home producers should take advantage of the opportunities offered by social media, where they can not only advertise and offer their products in the local market to friends and acquaintances but also easily attract potential customers from abroad.

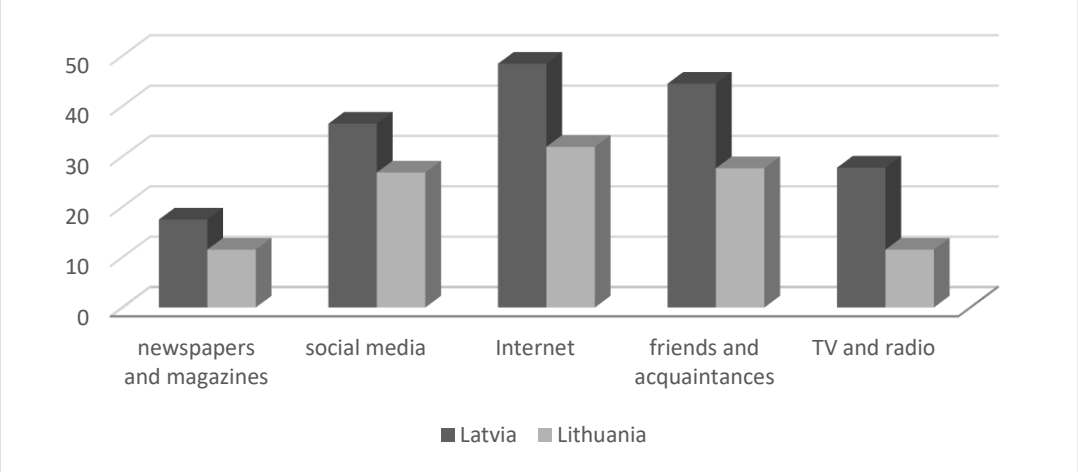

Fig. 14. Breakdown of the respondent answers regarding the sources of information on tourism services provided by home producers and about their products

Source: Own research.

4.8.2.5. Home production and the products from a gender perspective

An analysis of the respondents by gender revealed that 66% female respondents and 34% male respondents from Latvia and 60% female respondents and 40% male respondents from Lithuania participated in the survey (Figure 15). Compared with the number of Latvian male respondents, the number of Lithuanian male respondents was slightly larger, which could be explained by travel habits, as families/couples usually go together on cross-border trips. An analysis of CSB data (CSB 2018) on travel habits and their breakdown by gender confirmed the fact that tourism was more pronounced among women than men.

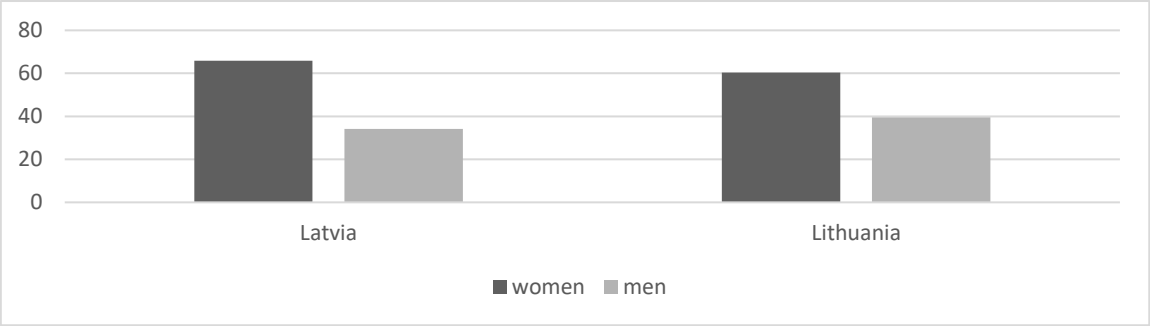

Fig. 15. Breakdown of the Latvian and Lithuanian respondents by gender

Source: Own research.

An analysis of differences in the frequency of consumption of home-produced foods between women and men allowed us to conclude that on a daily basis, men in Latvia more often consumed home-produced foods: 32% did it once or several times a week and 26% once or several times a quarter, while women in Latvia consumed such foods less often: only 21% once or several times a week and 25% once or several times a quarter. In Lithuania, however, more men than women consumed home-produced foods once or several times a month: 39% men and only 28% women, yet more women than men consumed such foods once or several times a quarter: 34% women and only 24% men (Figure 16).

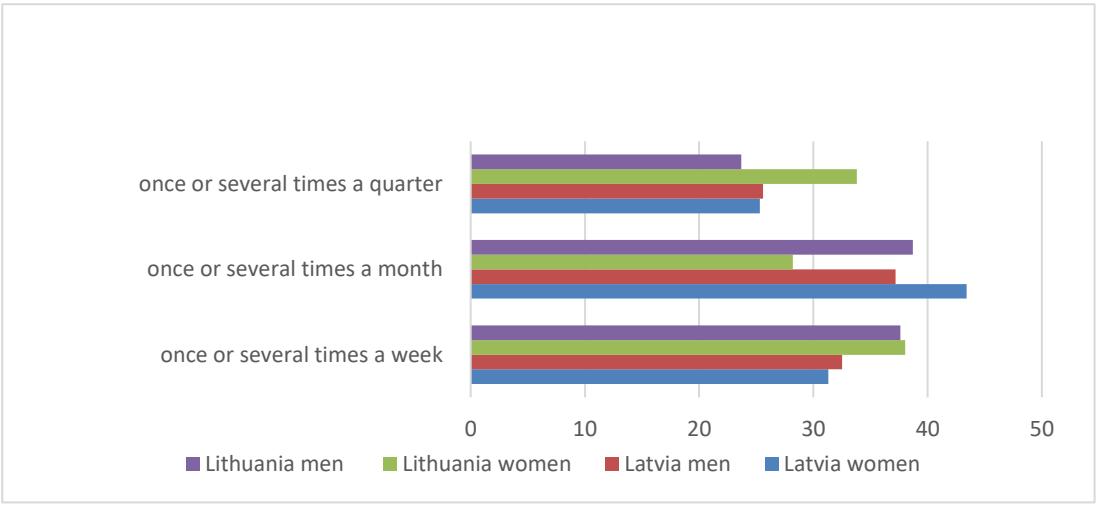

Fig.16. Breakdown of the respondent answers regarding the frequency of consumption of home-produced foods by gender

Source: Own research.

An analysis of the data obtained at the Baltic level revealed that among both in Latvia and in Lithuania, the frequency of consumption of home-produced foods was different between

men and women and such foods have become part of the daily diet of households. It could also be concluded that men's choice to consume such foods was as important and significant as women's. This proves once again that today the differences in the purchase and choices of food between men and women have decreased or even disappeared. Therefore, identifying future market trends for home producers, it is important to know the habits of both men and women.

To be able to identify which home-produced foods were more popular from the gender difference perspective, the answers of female respondents and those of male respondents were analysed separately (Figure 17).

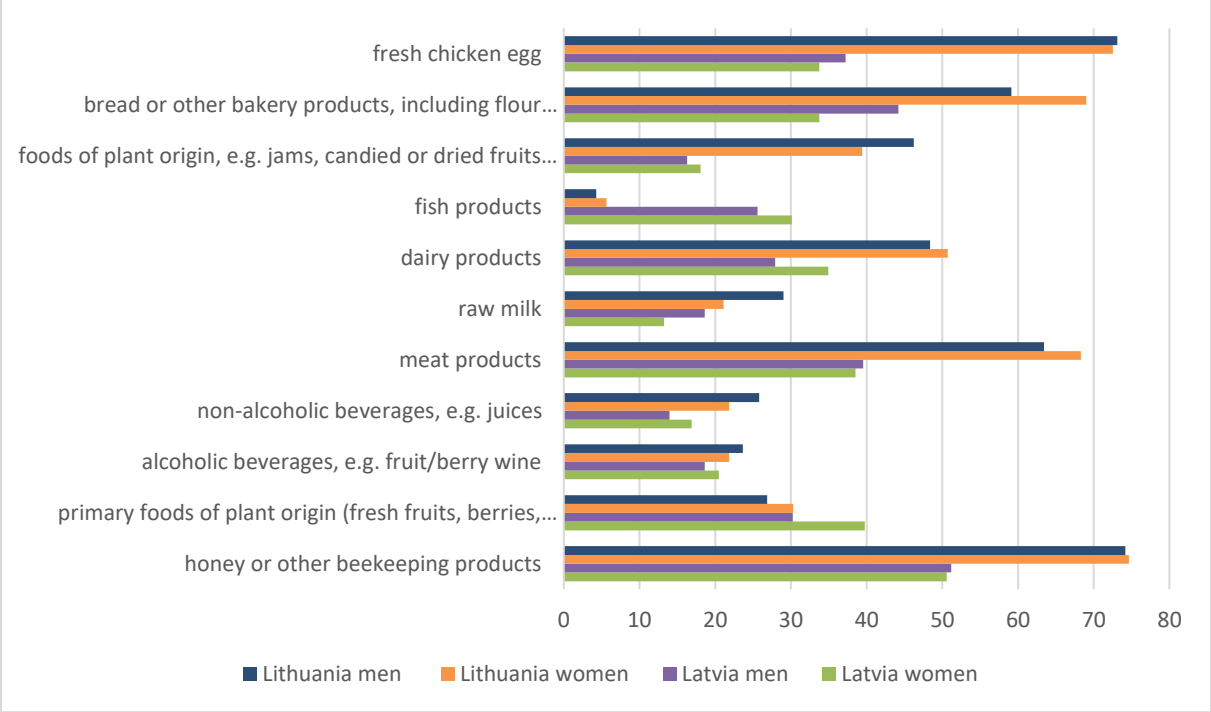

Fig. 17. Breakdown of the respondent answers regarding foods the respondents were most interested in by gender

Source: Own research.

Among the men both in Lithuania and Latvia, honey and other beekeeping products were the most popular home-produced foods, 74 and 51%, respectively. The second most popular choice by the Lithuanian men was fresh chicken eggs, 73%, followed by meat products, 63%. As regards the Lithuanian men, 59% daily consumed bread and other bakery products and 48 % dairy products. The second most popular choice by the Latvian male respondents was bread and other bakery products, 44%, followed by meat products, 40%. Eggs were also included in the daily menu of 37 % Latvian men, while 30 % Latvian women consumed foods of

plant origin. The data showed that there were significant differences in criteria for choosing home-produced foods between the genders (Figure 18).

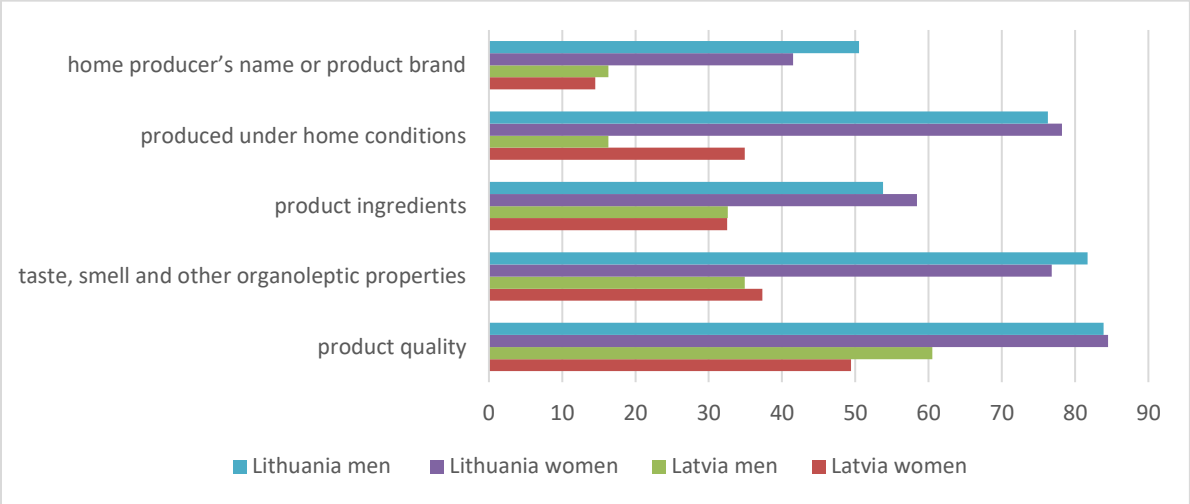

Fig.18 Breakdown of the respondent answers regarding key criteria for choosing home-produced foods by gender, in %

Source: Own research.

The most important criteria for the Lithuanian men was the taste, smell and other organoleptic properties of the product as well as product quality. For the Lithuanian women, product quality was the most important criterion. Product quality was the most important criterion for the Latvian men as well as the women.

Examining the respondents' answers about obtaining information about home-produced products and its availability, there are significant differences between women and men and the way information is obtained. Information is obtained on the Internet by 54% of Latvian male respondents and 36% of Lithuanian male respondents, but only 46 and 30% of Lithuanian women Latvian women. On the other hand, 31% of Latvian and 12% of Lithuanian women have indicated television and radio as a source of information more than men, but only 21% of Latvian and 11% of Lithuanian men have indicated men. Also, male respondents more often than women indicate that information is obtained from friends and acquaintances 47% of Latvian and 29% of Lithuanian respondents, while only 43% of Latvian and 27% of female respondents (Figure 19).

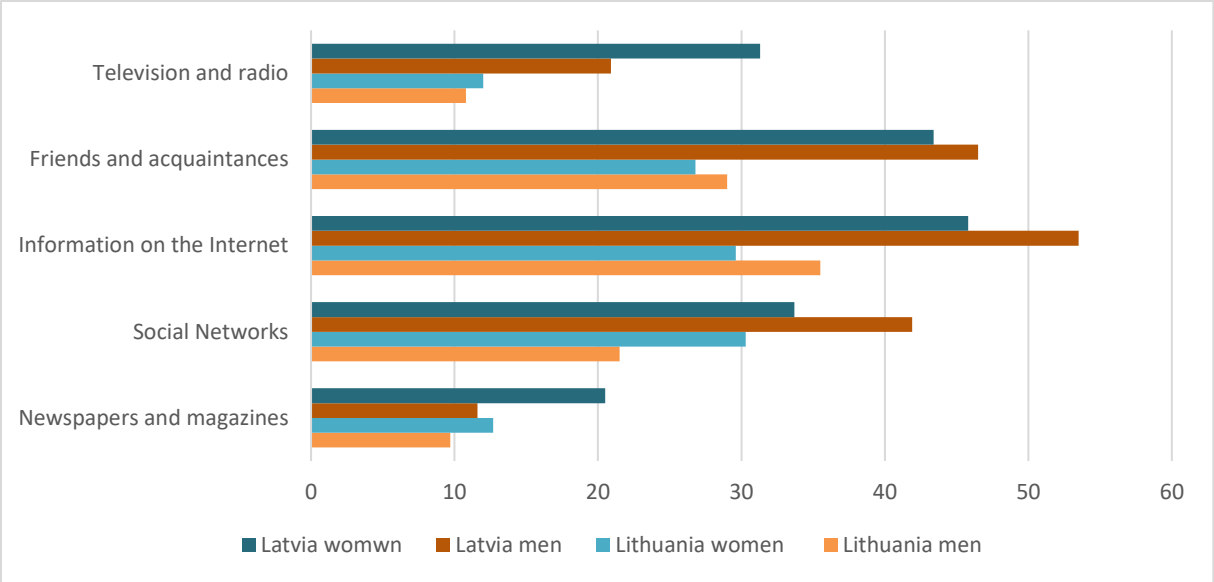

Fig. 19. Selection of information sources from a gender perspective

Source: Own research.

4.9. Changes in food value systems and shopping places: similarities and differences

The opinions of Latvian and Lithuanian respondents obtained during the survey give insight into the processes of change in the supply of and the demand for food. Based on the information obtained in the survey, two most important changes could be mentioned. First, the public's demands for food change, and the demands for food quality increase today.

This change is strongly influenced by today's phenomena, such as the aging of the population and, consequently, the growing importance of health care as an essential resource for ensuring wellbeing throughout adult life. The second change, in connection with the first, relates to the places for shopping for food. To expand special sales places for products of home producers – their own "shops", gastronomic tourism with a shopping opportunity, off-site sales etc. – along with sales in supermarkets, it is necessary to pave the way for easier access to such increasingly valuable food. The mentioned changes place new demands on the producer that needs to know the conditions for making healthy food and the quality of inputs used to produce the product that meets today's requirements. The changes also place new demands on the consumer that needs to know information about where to buy the product desired and the conditions for accessing it, not only in his/her municipality but also at least in neighbouring countries, which are destinations for tourism even during today's COVID-19 pandemic.

From the perspectives of both the Latvian and Lithuanian respondents, such changes in the food market are occurring. However, the question remains whether there are any differences in the assessment depending on whether the respondent represents Latvia or the neighbouring country Lithuania. However, a more detailed comparison of the opinions of the respondents from both countries shows some differences.

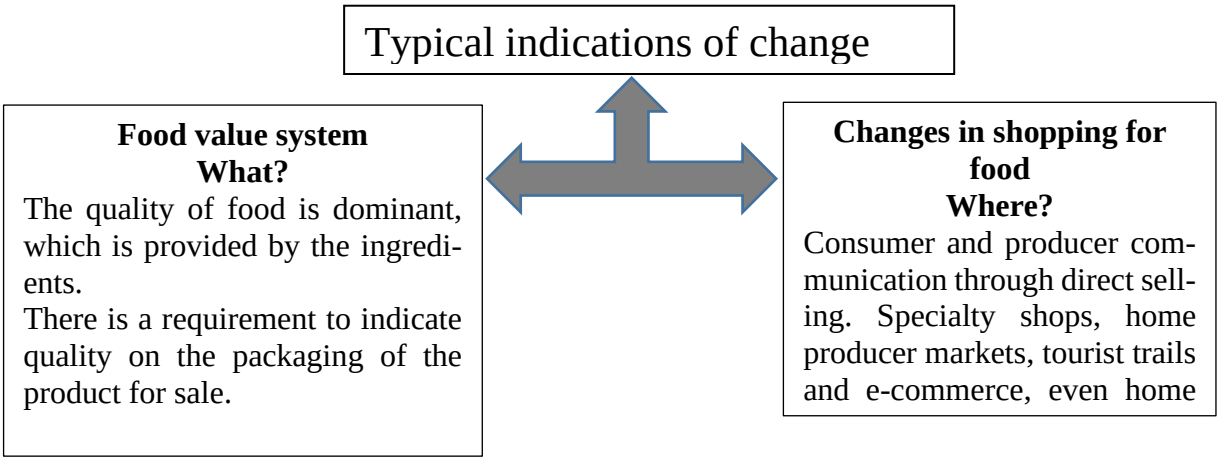

Fig. 20. Changes in the food value system and shopping places

Source: Own research.

Table 33. Value dominance (differences) from the perspectives of the Latvian and Lithuanian respondents regarding changes in the food value system and shopping places

Criteria	Latvian respondents	Lithuanian respondents
Frequency of consumption of home producer products	Once or several times a month	Once or several times a week
Home producer products consumed daily	Honey dominates	Honey and fresh hen eggs dominate equally
Criteria for choosing home producer products	Product quality dominates	Product quality dominates
Places for shopping for home producer products	Home producer products are available in a wide sales network	Home producer products are available in some sales places
Sources of information on home producer products and where to buy them	The Internet, friends and acquaintances, social media dominate	The Internet, friends and acquaintances, social media dominate

Source: Authors' own compilation based on the survey results.

As a result, it could be concluded that the processes of change in food value systems and places of shopping are more similar than different, at least in the countries examined: Latvia and Lithuania. This confirms that the ongoing global changes in climate, technology and the human community itself require each country's population to be ready to seek appropriate solutions under the new circumstances. The larger the global impact on the country examined, the more its population is prepared for the processes of change, including in the food market, which meets one of the primary physiological needs, i.e. food (Maslow 1970). The same circumstance also substantiates the prospects for the demand for and the supply of home-produced food. The demand is expected to increase and domestic food producers have to improve and restructure their products according to the needs of the consumer in order to maintain their economic position. This will also be facilitated by the expansion of the digital environment and the further development of e-commerce.

4.10. Prospects for the demand and the supply of food produced by home producers

Given the fact that consumer behaviour changes every year, and the consumers choose healthier, more environmentally friendly and higher-quality and value added organic/ecological foods, it could be concluded that the demand for quality food is expected to continue increasing in the future.

After analysing the survey data on opportunities for purchasing home producer products and the availability of such products on the market, it became clear that the respondents purchased their products in different ways. The most Latvian respondents preferred to buy such food during off-site sales (43%), at the marketplace (36%), directly from the producer (34%) and during tourist trips to home producers (34%). Unlike the Latvian respondents, the most popular way for the Lithuanian respondents to purchase home-produced food was tourism trips to home producers (53%), followed by off-site sales (31%) and purchasing products directly from the producer (28%) and at municipality-organized fairs (23%). The data could be explained by the daily availability of home producer products. Since the products of home producers are not available daily in supermarkets, but only mainly at the places of home producers themselves or at home producer markets, the demand for and the supply of such products could be projected to increase, provided that the products are constantly available in supermarkets or shopping centres.

In recent years, home producers have additionally been developing a culture of collective shopping, i.e. small groups of individuals make joint orders from local farmers and home producers. In this way, by producing small quantities of products and looking for direct sales channels, home producers gradually increase the quantities of sold products, which facilitates the availability of their products to a wider circle of consumers and interested individuals. In this way, coordinated and cooperative trade in local products must be developed in the long term. Currently, each home producer is looking for sales channels, yet most of them are fragmented. There is no single food basket that includes a wide range of foods and is convenient for the population. Local farmers and home producers are not popularized at the municipal level as well. At the national and municipal levels, local products are not praised. Most of the products are transported to the capital. To change the situation in the future, greater involvement of local governments is needed to support home producers and local farmers, develop home producer markets in the municipalities and find additional support to establish a single network – digital platforms where distance selling can expand, thereby increasing the demand for such products.

***

In this part of the book the trends in consumer behaviour in the domestic food market of Latvia and Lithuania were presented. At first theoretical and changes in the human value system has been presented. It was a background for analysing the objective and subjective causes and consequences of the increase in the demand for home-produced food. In the next step the European Green Deal and the policy trends in the European Union regarding home-produced food has been discussed. The next part of this chapter focused on empirical approach of home-produced products in Latvia and Lithuania to identify habits of consumers of organic and home production food. Results of research conducted by questionnaire showed that compared with similar consumer goods available in shops, consumers perceive home-produced products as higher quality products. The quality of products is very important to consumers, which, for home-produced products, is associated with home-cooked food, its taste and smell that represent primarily the cultural and historical heritage of agricultural traditions, which until recently were commonplace in the Baltic region.

Summary

The theoretical considerations and the results of empirical research presented in this monograph give us a broad view of consumer behaviour, changes in food consumption, changes in the level of satisfaction of nutritional needs and allow us to identify key consumer trends in the food market. A comparative analysis of shaping of the standards of living in Poland against the background of the remaining EU countries indicates the still existing discrepancies between the level of economic growth within the EU. Inequalities in terms of the standard of living of the societies of the EU countries result from differences in the level of their development, their technological and educational opportunities as well as the conditions and functioning of the labour market. Most Eastern European countries, including Poland as a Member State, managed to reduce the level of inequalities in living standards as a result of socio-economic changes.

At present, the methods which are most frequently applied to examine the rate of development of food consumption and changes occurring with regard to its structure are those which belong to the category of econometric analyses. The studies to date, carried out for many years, have focused on the substantive analysis of the development processes of food consumption, and they were mainly related to the assessment of the adequacy of various econometric models to describe the empirical processes of food consumption development in Poland. What is essential in the area under discussion is the assessment of the level of satisfaction of the food needs of Polish households made on the basis of quantitative methods: econometric and panel. The assessment of the saturation of food needs in Poland on the basis of the income elasticity of demand coefficients constituted a continuation of research conducted in the 90s of the past century. The conducted analysis of changes in food consumption of Polish households in the years 2003–2019 demonstrates the continuation of the trend emerged during the period of transformation of Polish economy.

To sum up, an important observation which arises from the study is that, at present, the panel regression models based on panel data obtained from the Polish Central Statistic Office (GUS) are used in research on food consumption more and more frequently. This study constitutes a relatively new application, initiated for the first time in 2017 for analyse the needs of the food market. All models for panel data were built as part of the procedure; however, during the research, it turned out that only those with fixed individual effects were correct and could be considered relevant as far as the findings of the current study are concerned. On the other hand, panel studies, being a new methodological approach to food consumption studies, were applied

in research for the first time. Therefore, I am ready to consider them of particular importance in modelling food consumption. The modelling took into account the cross-section of individual types of households and product categories.

What constitutes a novelty in the approach to food consumption studies are the panel models developed for individual types of households in terms of product categories constituting the foundation of food consumption. An attempt was made to build all the presented models for panel data but in the course of the study it turned out that only models with constant unit effects are correct.

Basing on the analysis of the panel data for each of the three groups of households, three categories of models were built: an estimated model (LSM model), a model with random effects (REM model) and a model with fixed effects (FEM model). The estimated classic LSM model constitutes the simplest way of estimating panel data through the application of the classic least squares method (LSM). The estimation of a sample with the use of this method does not take into account the division of the observation in terms of section and time units. This model is correct only in the absence of correlation between the individual effect and the independent variable. The estimation of the model parameters is said to be admissible where the individual effect is absent in the model.

The next model to be built was the model with random effects (REM). The REM model is applied where differences between objects can be presented by means of a variable constant. In particular, where section units are randomly drawn from the population and it is then assumed that the individual effect is performed by a random variable.

The third model to be built was the model with fixed effects (FEM) which assumes that there are differences between objects. Subsequent studies have pointed to the importance of econometric models estimated on the basis of panel data in order to identify unobservable factors. This method creates a possibility to apply them in the analysis of critical economic problems.

What is more, the conducted analysis of changes in nutritional needs of Polish households in the years 2003–2019 demonstrates the continuation of the trend emerged during the period of transformation of Polish economy.

Many interesting conclusions can also be drawn from the research conducted among Polish consumers ($N = 511$). Empirical research aimed at identifying criteria (factors) that guide respondents in the selection of food products and at characterising purchase behaviour on the food market. Interesting relationships were observed between socio-demographic features and

food purchasing behavior, as well as the impact of these features on the identification of determinants for consumer behaviour in the food market. Socio-demographic characteristics, especially age, education and household size, influenced the importance ratings of product characteristics determining food shopping behaviour. For example, as the age of the respondents increased, the importance of country of origin, shelf life and absence of food additives increased, while the importance of product price decreased. As age increased, respondents also paid more attention to package size and aesthetics, ease of opening and transport. Those with higher education were more likely to pay attention to the country of origin, and those with larger households were more likely to pay attention to the size of the packaging Interesting conclusions can also be drawn from studies conducted in Latvia and Lithuania regarding the behaviour and habits of consumers of organic and home production food products and the ease of product transport from shop to home.

Interesting conclusions can also be drawn from studies conducted in Latvia and Lithuania regarding the behaviour and habits of consumers of organic and home production food products. The opinions of Latvian and Lithuanian respondents obtained during the survey give insight into the processes of change in the supply of and the demand for food. Based on the information obtained in the survey, two most important changes could be mentioned. First, the public's demands for food change, and the demands for food quality increase today.

This change is strongly influenced by today's phenomena, such as the aging of the population and, consequently, the growing importance of health care as an essential resource for ensuring wellbeing throughout adult life. The second change, in connection with the first, relates to the places for shopping for food. To expand special sales places for products of home producers – their own "shops", gastronomic tourism with a shopping opportunity, off-site sales etc. The popularization of home producers will be successful if the emphasis is placed on tourist visits to home producers through attracting tourists from abroad. Much attention, emphasis and action regarding popularizing home producer products and dealing with their accessibility problems should be focused on modern sources of information, such as information available on the Internet and social media.

Given the external environmental factors (e.g. COVID-19), as well as changing consumer habits when shopping at a distance, it is necessary to develop and implement modern technologies and e-commerce in the short food chain so that consumers can easily, conveniently and timely buy home producer products, thereby increasing the demand for and the supply of such products.

It is necessary to take over the experience and practices of various countries and nationalities to find the most efficient way to develop short food chains for farmers and artisanal producers in order to create the most efficient markets for both producers and their final consumers of different nationalities.

References

Adam, J.H. (1989). Longman Dictionary of Business English: New Edition Longman, Burnt Mill, Harlow, Essex.

Ajzen, I. (1991). The theory of planned behavior, Organizational Behavior and Human Decision Processes 50(2), 179–211.

Ajzen, I., Fishbein, M. (2008). Scaling and testing multiplicative combinations in the expectancy-value model of attitudes, Journal of Applied Social Psychology 38(9), 2222–2247.

Allardt, E. (1989). Recent developments in Scandinavian sociology, Annual Review of Sociology 15, 31–45.

Altkorn, J., Kramer, T. (eds). (1998). Leksykon marketingu, PWE, Warszawa.

ANO Ilgtspējīgas attīstības mērķi, (online) https://www.pkc.gov.lv/lv/attistibas-planosana-latvija/ano-ilgtspejigas-attistibas-merki (access: 22.08.2021).

ARC (2020). Rośnie świadomość polskich konsumentów, (online) https://arc.com.pl/rosnie-swiadomosc-polskich-konsumentow/ (access: 22.08.2021).

Babicz-Zielińska, E. (2001). Zachowania konsumentów w stosunku do żywności i żywienia, Żywność 4(29), 5–15.

Baltagi, B.H. (2013). Econometric Analysis of Panel Data, Fifth Edition, John Wiley and Sons, Ltd, Chichester.

Barber, B. (2008), Skonsumowani. Jak rynek psuje dzieci, infantylizuje dorosłych i połyka obywateli, Muza, Warszawa.

Bartkiene, E., Steibliene, V., Adomaitiene, V., Juodeikiene G., Cernauskas, D., Lele, V., Klupsaite, D., Zadeike, D., Jarutiene, L., Raquel, P., Guiné F. (2019). Factors Affecting Consumer Food Preferences: Food Taste and Depression-Based Evoked Emotional Expressions with the Use of Face Reading Technology. BioMed Research International 4, 1–10, https://doi.org/10.1155/2019/2097415

Becker, G.S. (1990). Ekonomiczna teoria zachowań ludzkich, Wydawnictwo Naukowe PWN, Warszawa.

Begg, D., Fischer, S., Dornbusch, R. (1995). Ekonomia, t. I, PWE, Warszawa.

Biørn, E. (2016). Econometrics of Panel Data: Methods and Applications (1st edition), OUP, Oxford.

Blundell, R., Bond, S. (2000). GMM estimation with persistent panel data: an application to production functions, Econometric Reviews 19, 321–340.

Bruno, G. (2004). Limited dependent panel data models: a comparative analysis of classical and Bayesian inference among econometric packages. Computing in Economics and Finance 41, (online) https://econpapers.repec.org/paper/scescecf4/41.htm (access: 22.08.2021).

Bywalec Cz. (2010). Konsumpcja a rozwój gospodarczy i społeczny, C.H. Beck, Warszawa.

Central Statistical Bureau of Latvia, CSB (2015). Household Consumption Trends in Latvia.

Central Statistical Bureau of Latvia, CSB (2017). Lietuvos gyventojai tautybes požiūriu.

Central Statistical Bureau of Latvia, CSB (2018). Tourism in Latvia, (online) https://www.csb.gov.lv/sites/default/files/publication/2018-07/Nr_22_Turisms_Latvija_2018_%2818_00%29_LV_EN.pdf (access: 22.08.2021).

Central Statistical Office (GUS). Unpublished Data of the Department of Social Studies and Living Conditions for the years 2003–2015, 2019), Warsaw.

Central Statistical Office, GUS (2004, 2011, 2016, 2020). Budżety gospodarstw domowych w latach 2003, 2010, 2015, 2019, Warszawa.

Centrālā Statistikas Pārvalde (2015). Mājsaimniecību patēriņa tendences Latvijā, Riga, (online) https://www.csb.gov.lv/sites/default/files/publication/2017-08/Nr%2015%20Majsaimniecibu%20paterina%20tendences%20Latvija%20%2815_00%29%20LV.pdf (access: 15.05.2021).

Cheema, A.N. (2012). Upcoming Picture of Ageing Population: Pakistan, Quality & Quantity 46, 2399–2413.

Chen, M.F. (2009). Attitude toward organic foods among Taiwanese as related to health consciousness, environmental attitudes, and the mediating effects of a healthy lifestyle, British Food Journal 111(2), 165–178.

Chinnici, G., D'Amico, M., Pecorino, B. (2002). A multivariate statistical analysis on the consumers of organic products, British Food Journal 104 (3/4/5), 187–199.

Codex Alimentarius General Standards for Food Additives, (online) http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/gsfa/en/ (access: 22.08.2021).

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 5 May 2020: A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system,

COM(2020) 381, (online) https://eur-lex.europa.eu/resource.html?uri=cellar:ea0f9f73-9ab2-11ea-9d2d-01aa75ed71a1.0001.02/DOC_1&format=PDF (access: 20.05.2021).

Communication from the Commission, The European Green Deal of 11 December 2019, (online) https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640 &from=ET (access: 20.05.2021).

Council Regulation (EC) No. 834/2007 of June 28, 2007. on organic production and labeling of organic products and repealing EEC Regulation No. 2092/91, (Journal of Laws UE L of July 20, 2007 No. 189).

Dąbrowska A., Mróz B., Janoś-Kresło M., Kasprzak R. (2017). Jakość życia. Konsumpcja, SGH, Warszawa.

Dąbrowska, A., Bylok F., Janoś-Kresło M., Kiełczewski D., Ozimek I., (2015). Kompetencje konsumentów – innowacyjne zachowania –zrównoważona konsumpcja, PWE, Warszawa.

Dach, Z. (2001). Podstawy mikroekonomii, Akademia Ekonomiczna, Kraków.

Dańska, B., Laskowska, I. (2011). The use of panel models to study the diversification of economic expenses for food, hygiene and health protection. Works of the Institute of Econometrics and Statistics of the Łodz University, Łódź.

Dańska-Borsiak, B. (2009). Application of dynamic panel models in microeconomic and macroeconomic research, Statistical Review 56(2), 25–41.

Davidov, E. (2008). A cross-country and cross-time comparison of the human values measurements with the second round of the European Social Survey, Survey Research Methods 2(1), 33–46.

Deaton, A. (1998). The analysis of household survey: a microeconometric approach to development policy, Johns Hopkins University Press, Baltimore.

Dejnaka, A. (2017). Trendy w zachowaniach konsumentów, Research Papers of Wroclaw University of Economics and Business 501, 44–49.

Eiropas Ekonomikas un sociālo lietu komitejas atzinums par tematu "Ilgtspējīgākas pārtikas sistēmas" (izpētes atzinums) (2016/C 303/08), Eiropas Savienības Oficiālais Vēstnesis, (online) https://eur-lex.europa.eu/legal-content/LV/TXT/PDF/?uri=CELEX:52016AE0232&from=EN (access: 20.05.2021).

Engel, F.J., Blackwell, R.D., Miniard, P.W. (1993). Consumer Behaviour, The Dryden Press.

ESOV (2016), Official Journal of the European Union 2016/C 303/08, Opinion of the European Economic and Social Committee on more sustainable food systems.

European Commision, Legislation for the organics sector, (online) https://ec.europa.eu/info/food-farming-fisheries/farming/organic-farming/legislation_en (access: 25.05.2021).

Eurostat Newsrelease, 181/2020 15 December 2020, (online) https://ec.europa.eu/eurostat/documents/portlet_file_entry/2995521/2-15122020-BP-EN.pdf/cd3fcb0f-faee-d0ce-0916-9be3ac231210 (access: 13.08.2021).

Eurostat Newsrelease, 188/2019 December 2019, (online) https://ec.europa.eu/eurostat/documents/2995521/10266425/2-13122019-AP-EN.PDF/c5d54bb8-7ddc-5e79-7fdb-a7a570cff36f (access: 13.08.2021).

Eurostat, Income and living conditions – Overview, (online) https://ec.europa.eu/eurostat/web/income-and-living-conditions/data/database (access: 19.08.2021).

Fabiunke, H., Fischer, H., Jager, J., and Koppert, W. (1976). Badania ankietowe popytu konsumpcyjnego, PWE, Warszawa.

FAO Fisheries and Aquaculture Circular No. 1089 FAO/WHO (2016). "Consumers' concerns and external drivers in food markets" (online) http://www.fao.org/3/i4939e/i4939e.pdf (access: 13.08.2021).

Fotopoulos, C., Krystallis A., Ness M. (2003). Wine produced by organic grapes in Greece: using means-end chains analysis to reveal organic buyers' purchasing motives in comparison to non-buyers, Food Quality and Preference, 14, 549-566.

Gajewski, S. (1994). Zachowanie się konsumenta a współczesny marketing Wydawnictwo Uniwersytetu Łódzkiego, Łódź.

Gemius (2019), Online Shopping Habits of Latvian Internet Users, (online) https://biznesam.swedbank.lv/ievads/izaugsme/tirdznieciba-interneta-52941 (access: 08.06.2021).

Gemius (2020). Gemius e-komercijas pētījums: Latvijā interneta lietotājus iepirkties motivē iespēja salīdzināt preces, Lietuvā – piegāde mājās, (online) https://www.gemius.lv/all-reader-news/gemius-e-komercijas-petijums-latvija-interneta-lietotajus-iepirkties-motive-iespeja-salidzinat-preces-lietuva-piegade-majas.html (access: 10.06.2021).

Grzega, U. and Kieżel E. (2017). Trendy w zachowaniach konsumentów, [in:] M. Bartosik-Purgat (ed.), Zachowania konsumentów. Globalizacja, nowe technologie, aktualne trendy, otoczenie społeczno-kulturowe, PWN, Warszawa.

Grzybowska-Brzezińska, M. (2011). Świadomość ekologiczna konsumentów a ich zachowania na rynku żywności, Studia i Materiały Polskiego Stowarzyszenia Zarządzania Wiedzą 51, 242–253.

Hansen, F. (1972). Consumer Choice Behavior. A Cognitive Theory, The Free Press, New York.

Hsiao, C., (2003). Analysis of panel data, Cambridge University Press, Cambridge.

IMAS International (2017). Żywność ekologiczna w Polsce, (online) http://imas.pl/blog/raport-zywnosc-ekologiczna-w-polsce-2017-juz-do-pobrania/ (access: 18.08.2021).

Islam, N. (1995). Growth empirics: a panel data approach, Quarterly Journal of Economics 110(4), 1127–1170.

Janoś-Kresło, M., Mróz, B. (2006). Konsument i konsumpcja w gospodarce rynkowej, SGH, Warszawa.

Karabiyik, H., Palm, F.C., Urbain, J.P. (2019). Econometric Analysis of Panel Data Models with Multifactor Error Structures, Annual Review of Economics 11, 495–522.

Kassenberg, A. (2012), Globalne problemy ekologiczne i ich konsekwencje dla rozwoju gospodarczego Biuletyn PTE 2(56), 135–151.

Katona, G. (1964). The Mass Consumption Society, McGraw-Hill Book Company, New York.

Katona, G. (1975). Psychological Economics, Elsevier Scientific Publishing Company, Amsterdam.

Katona, G.(1968). Consumer Behavior. Theory and Findings on Expectations and Aspi-rations, The America Economic Review 58, 2, 19–30.

Kaufman, C.F. (1995). Shop 'til you drop: tales from a physically challenged shopper, Journal of Consumer Marketing 12(3), 39–55.

Kehlbacher, A. (2012). Estimating Food and Drink Demand Elasticities using the Family Food Module of the LCF data. University of Reading Department of Food Economics and Marketing (online) https://dam.ukdataservice.ac.uk/media/357447/kehlbacher.pdf 18.08.2021).

Kieżel, E. (2004). Racjonalność konsumpcji i zachowań konsumentów, PWE, Warszawa.

Kieżel, E. (2010). Czynniki kształtujące zachowanie konsumentów, [in:] E. Kieżel (ed.), Konsument i jego zachowania na rynku europejskim, PWE, Warszawa.

Klonaris, S., (2001). Structural change in Greek meat demand, Agricultural Economics Review 2, 31–41.

Komisijas Paziņojums Eiropas Parlamentam, Padomei, Eiropas Ekonomikas un Sociālo Lietu Komitejai un Reģionu Komitejai Stratēģija "No lauka līdz galdam". Taisnīgas, veselīgas un videi draudzīgas pārtikas sistēmas vārdā (COM/2020/381 final), (online) https://eur-lex.europa.eu/legal-content/LV/TXT/?qid=1590404602495&uri=CELEX%3A52020DC0381(access: 15.06.2021).

Kontroles institūcijās reģistrētie bioloģiskās lauksaimniecības uzņēmumi, Pārtikas un veterinārais dienests, (online) https://registri.pvd.gov.lv/cr/dati?q=Re%C4%A3istr%C4%93tie+biolo%C4%A3isk%C4%81s+lauksaimniec%C4%ABbas+uz%C5%86%C4%93mumi (access: 16.06.2021).

Kotler, Ph. (1999). Marketing. Analiza, Planowanie, Wdrożenie, Kontrola, Felberg, Warszawa.

Kotler, Ph., Armstrong G., Saunders J., Wong V. (1996). Principles of marketing, Prentice Hall, New York.

Kusińska, A., Olejniczuk-Merta, A. (ed.) (2009). Konsumpcja w Polsce. Raport roczny, IBBRK, Warszawa.

Kwasek, M. (2008). Dochodowa elastyczność popytu na żywność, Wiadomości Statystyczne 5, 39–51.

Kwasek, M. (2012). Wzorce konsumpcji żywności w Polsce, Studia i Monografie, IERiGŻ, Warszawa.

Kwasek, M. (ed.). (2015). Z badań nad rolnictwem społecznie zrównoważonym (33). Analiza bezpieczeństwa żywnościowego Polski, IERiGŻ-PIB, Warszawa.

Lancaster, T. (1996). Change and Innovation in the Technology of Consumption. American Economic Review 2, 14–23.

Laros, F.J.M. and Steenkamp J. (2005). Emotions in consumer behavior: a hierarchical approach, Journal of Business Research 58(10), 1437–1445.

Lemanowicz, M. (2020). Indications of consumers' prosumer behaviour on the food market, Zeszyty Naukowe Polityki Europejskie, Finanse i Marketing 24(73), 81–91.

Lemanowicz, M., Szwacka-Mokrzycka, J. (2019). Identification of leading consumer trends on the food market, [in:] Auzina A, (ed.), Integrated and sustainable regional development :marketing and sustainable consumption, Proceedings of the International Scientific Conference, 9–10 May, Jelgava, Latvia. Latvia University of Life Sciences and Technologies, 291–297.

Lerner, J.S., Keltner, D. (2000). Beyond valence: toward a model of emotion-specific influences on judgement and choice, Cognition & Emotion 14(4), 473–493.

Lindstrom, M. (2009). Zakupologia. Prawdy i kłamstwa o tym, dlaczego kupujemy, Znak, Kraków.

Luszniewicz, A. (1982). Statystyka społeczna. PWE, Warszawa.

Maciejewski, G. (2010). Ryzyko w decyzjach nabywczych konsumentów, Wydawnictwo Uniwersytetu Ekonomicznego w Katowicach, Katowice.

Maddala, G.S. (2001). Introduction to Econometrics, John Wiley and Sons Ltd, , Chichester.

Magnusson, M.K., Arvola, A., Koivisto Hursti, U., Aberg, L., Sjoden, P.O. (2001). Attitudes towards organic foods among Swedish consumers, British Food Journal 103(3), 209–226.

Maslow, A.H., (1970). Motivation and personality, Harper & Row, New York.

Mazurek-Łopacińska, K. (2020). Ekologizacja konsumpcji w kontekście bezpieczeństwa produktów żywnościowych, [in:] A. Dabrowska (ed.), Bezpieczeństwo konsumentów na rynku żywności, SGH, Warszawa.

McEachern, M.G., McClean, P. (2002). Organic purchasing motivations and attitudes: are they ethical? International Journal of Consumer Studies 26(2), 85–92.

Michalski, E. (2017). Marketing. Podręcznik akademicki, Wydawnictwo Naukowe PWN, Warszawa.

Mruk, H. (2007), Makrotrendy a zachowania konsumentów, [in:] Z. Kedzior (ed.), Konsument – gospodarstwo domowe – rynek, Wydawnictwo Uniwersytetu Ekonomicznego w Katowicach, Katowice.

Nicosia, F.M. (1996). Customer decision processes, Marketing and Advertising Implications, Prentice-Hall, Englewood Cliffs, New York.

Nowalska, D. (2007), Rekonstrukcja wzorów zachowań konsumpcyjnych wśród kobiet na przykładzie województwa śląskiego, Instytut Socjologii Uniwersytetu Śląskiego, Katowice (unpublished work).

O`Shaughnessy, J. (1994). Dlaczego ludzie kupują, PWE, Warszawa.

Olejniczuk-Merta, A. and Garbarski, L. (2017). Segmentacja rynku – analiza krytyczna, [in:] M. Bartosik-Purgat (ed.), Zachowania konsumentów. Globalizacja Nowe Technologie Aktualne Trendy Otoczenie społeczno-kulturowe, Wydawnictwo Naukowe PWN.

Osińska, M. (ed.). (2007). Contemporary econometrics, Print-Intro, Inowrocław SA., Toruń.

Oslo roundtable on sustainable consumption. (1994), (online) https://enb.iisd.org/consume/oslo004.html#top (access: 10.06.2021).

Padel, S., Foster, C. (2005). Exploring the gap between attitudes and behaviour – understanding why consumers buy or do not buy organic food, British Food Journal 107(8), 606–625.

Padel, S., Jasinka, A., Rippin, M., Schaack, D., Willer, H. (2008). European Market for organic food in 2006, [in:] H. Willer, M. Yussefi-Menzler, N. Sorensen (eds), The World of Organic Agriculture – Statistics and Emerging Trends, IFOAM, FIBL, Bonn, 131–139.

Parlińska, M. (2008). Rola informacji w gospodarce rynkowej na podstawie wybranych rolnych rynków hurtowych, Wydawnictwo SGGW, Warszawa.

Parlińska, M., Parlińska A. (2021). Informacja we współczesnej gospodarce, [in:] R. Runiewicz, I. Przychocka, L. Milewski (eds), Współczesne problemy zarządzania, bezpieczeństwa i nowoczesnej inżynierii, Instytut Wydawniczy EuroPrawo, Warszawa, 375–388.

Regulation No. 1333/2008 of the European Parliament and of the Council of 16 December 2008 on food additives.

Rokeach, M.J. (1973), The Nature of Human Values, The Free Press, New York.

Roland Berger Report, (2016). Polski rynek handlu spożywczego w 2010–2020 roku, (online) https://www.rolandberger.com › publication_pdf (access: 18.08.2021).

Rosa, G., Perenc J. (eds) (2011). Zachowania nabywców. Wydawnictwo Uniwersytetu Szczecińskiego, Szczecin.

Roszkowska-Hołysz, D. (2013). Determinants of consumer purchasing behavior, Management 17, 333–345.

Rudnicki, L. (2004). Zachowania rynkowe nabywców. Mechanizmy i uwarunkowania, Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, Kraków.

Rudnicki, L. (2012). Zachowania konsumentów na rynku, PWE, Warszawa.

Saba, A., Messina, F. (2003). Attitudes towards organic foods and risk/benefit perception associated with pesticides, Food Quality and Preference 14, 637–645.

Sahota, A. (2009). The global market for organic food and drink, [in:] H. Willer, L. Kilcher (eds), The World of Organic Agriculture, Statistics and Emerging Trends, FIBL, IFOAM, Bonn, 59–64.

Schiffman, L.G., Kanuk, L.L. (1995). Consumer Behavior, Prentice-Hall, Englewood Cliffs, New York.

Schwartz, S.H. (1992). Universals in the content and structure of values: theoretical advancesand empirical tests in 20 countries, Advances in Experimental Social Psychology, 25(1), 1–65.

Schwartz, S.H. (2006). Basic Human Values: An Overview, The Hebrew University of Jerusalem, Jerusalem.

Shepherd, R. (1989). Factors influencing food preferences and choice, [in:] R. Shepherd (ed.) Handbook of the: Psychophysiology of Human Eating, Wiley, Chichester.

Słaby, T. (1990). Poziom życia miejskich gospodarstw domowych., Wiadomości Statystyczne 6, 8–10.

Słaby, T. (2007). Poziom i jakość życia, [in:] T. Panek (ed.), Statystyka społeczna, PWE, Warszawa, 99–130.

Smyczek, S., Sowa, I. (2005). Konsument na rynku. Zachowania, modele, aplikacje, Difin, Warszawa.

Sobczyk, G. (2018). Zachowania konsumentów wobec nowych trendów konsumpcji – wyniki badań, Annales H – Oeconomia, Sectio H, 52(1), 171–180.

Sobol, E. (1995). Słownik Wyrazów Obcych, Wydawnictwo Naukowe PWN, Warszawa.

Światowy, G. (2006). Zachowania konsumenckie, PWE, Warszawa.

Szwacka-Mokrzycka J. (2017).Changes in food consumption in Poland and other EU countries, Acta Scientiarum Polonorum, Oeconomia 16(4), 169–178.

Szwacka-Mokrzycka, J. (2016). Stimulators and barriers of demand for food (Polish case), Acta Scientiarum Polonorum, Oeconomia 15(3), 123–133.

Szwacka-Mokrzycka, J. (2018). Paradygmaty rozwoju konsumpcji żywności w Polsce, Wydawnictwo Naukowe PWN, Warszawa.

Szwacka-Mokrzycka, J. (2018). Unpublished results of econometric studies, Typescript, Warsaw.

Szwacka-Mokrzycka, J. (2020). The panel data regression concept in consumption modeling, Economic Annals – XXI, 185(9–10), 61–69.

Szwacka-Mokrzycka, J., Lemanowicz M. (2020). Konsumenci wobec żywności ekologicznej, [in:] A. Dąbrowska (ed.), Bezpieczeństwo konsumentów na rynku żywności, SGH, Warszawa, 29–40.

Szwacka-Salmonowicz, J., (2003). Zmiany zachowań nabywców jako determinanta kształtowania strategii segmentacyjnych przedsiębiorstw przemysłu spożywczego w Polsce, Wydawnictwo SGGW, Warszawa.

Szwacka-Salmonowicz, J., Zielińska, Z. (1996). Hierarchia potrzeb żywnościowych w 1993 roku na tle potrzeb1986 roku, IRWiR PAN, Warszawa.

The Intergovernmental Panel on Climate Change (2020). Special report on climate change and land, Food security, (online) https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf (access: 15.06.2021).

Thogersen, J. (2009). Consumer decision making with regard to organic food products, [in:] T. Noronha Vaz, P. Nijkamp, J.L. Rastoin (eds), Traditional Food Production and Rural Sustainable Development, Routledge, London, 173–192.

Ustawa z dnia 23 kwietnia 1964 r. – Kodeks cywilny, Dz.U. 1964 nr 16 poz. 93, art. 22.

Verhoef, P.C. (2005). Explaining purchases of organic meat by Dutch consumers, European Review of Agricultural Economics 32, 245–67.

Watson, J., Spence, M.T. (2007). Causes and consequences of emotions on consumer behaviour: a review and integrative cognitive appraisal theory, European Journal of Marketing 41(5–6), 487–511.

Westbrook, G. (2012). 10 Global Macro Trends for the Next Five Years, (online) http://blog.euromonitor.com/2012/11/10-global-macro-trends-for-the-next-five-years.html. (access: 10.06.2021).

Wooldridge, J.H. (2001). Econometric Analysis of Cross Section and Panel Data, The MIT Press, Cambridge.

WWF (2016). The Global Food System: An Analysis, (online) https://www.metabolic.nl/projects/wwf-analysis-global-food-system/ (access: 20.08.2021).

Zalega, T. (2007). Konsumpcja – podstawy teoretyczne, Wydawnictwo Wydziału Zarządzania Uniwersytetu Warszawskiego, Warszawa.

Zalega, T. (2013). Nowe trendy i makrotrendy w zachowaniach konsumenckich gospodarstw domowych w XXI wieku, Konsumpcja i Rozwój 2(5), 3–21.

Zalega, T., (2012). Konsumpcja, Determinanty, Teorie, Modele, PWE, Warszawa.

Zielińska, Z. (1978). Współczynniki elastyczności dochodowej jako mierniki przemian w strukturze spożycia żywności w Polsce, Handel Wewnętrzny 5.

Zimbardo, P., Johnson, R., McCann, V. (2017). Podstawy psychologii, t. 1, Wydawnictwo Naukowe PWN, Warszawa.

Zych, A. (2008). Uwarunkowania zachowań konsumpcyjnych, [in:] D. Markowski, P. Setlak. (eds.), Społeczeństwo konsumpcyjne. Uwarunkowania społeczne i kulturowe, Wydawnictwo Diecezjalne, Tarnobrzeg.

Annex

Table 1. Changes in total expenditures for chosen EU countries in 2010–2019

Countries	year by year (in %)								
Belgium	0.04	0.03	0.03	–0.87	0.12	0.04	0.07	0.06	0.07
Germany	0.04	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.03
Luxembourg	0.07	0.05	0.03	0.05	–0.01	0.03	0.03	0.06	0.04
Bulgaria	0.06	0.06	–0.05	0.02	0.04	0.04	0.07	0.06	0.07
Estonia	0.08	0.09	0.07	0.05	0.03	0.05	0.07	24.94	–0.96
Latvia	0.10	0.09	0.06	0.02	0.02	0.04	0.06	0.06	0.06
Lithuania	0.10	0.06	0.05	0.04	0.03	0.05	0.07	0.06	0.05
Hungary	0.03	0.00	–0.01	0.00	0.04	0.05	0.09	0.05	0.07
Poland	0.05	0.02	0.01	0.03	0.03	–0.01	0.10	0.06	0.05
Romania	0.04	0.01	0.06	0.04	0.06	0.08	0.11	0.09	0.09
Slovenia	0.02	0.00	–0.02	0.94	0.03	0.04	0.06	0.06	0.05
Slovakia	0.02	0.04	0.00	1.63	0.02	0.03	0.02	0.03	0.02
Czechia	0.05	–0.01	–0.02	–0.04	0.05	0.05	0.09	0.08	0.06

Source: Own elaboration.

Table 2. Changes in food expenditures for chosen EU countries in 2010–2019

Countries	year by year (in %)								
Belgium	0.01	0.06	0.03	0.02	0.03	0.03	0.02	0.03	0.02
Germany	0.00	0.03	0.03	0.04	0.04	0.03	0.03	0.06	0.03
Luxembourg	0.07	0.04	0.04	0.02	0.02	0.04	0.01	0.03	0.03
Bulgaria	0.03	0.03	–0.05	0.13	0.05	0.05	0.05	0.06	0.03
Estonia	0.09	0.07	0.10	0.08	0.02	0.03	0.06	0.05	0.03
Latvia	0.07	0.08	0.05	0.01	–0.04	0.02	0.04	0.09	0.05
Lithuania	0.10	0.06	0.03	0.01	0.01	0.04	0.04	0.01	0.02
Hungary	0.04	0.01	0.02	0.01	0.05	0.02	0.11	0.03	0.06
Poland	0.01	0.01	0.01	–0.02	0.00	0.00	0.08	0.03	0.07
Romania	0.06	0.07	0.04	–0.01	0.02	0.08	0.09	0.11	0.10
Slovenia	0.06	0.03	–0.01	0.00	0.01	0.02	0.01	0.03	0.04
Slovakia	0.02	0.09	0.00	–0.01	0.04	0.03	0.10	0.08	0.06
Czechia	0.09	0.04	0.00	0.00	0.04	0.05	0.08	0.05	0.08

Source: Own elaboration.

Table 3. Food consumption elasticity factors for households in total in 2003

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0261	0.0632	0.0451	0.0329	0.0239	0.0129
Cakes and bakery products	0.5564	1.3484	0.9624	0.7005	0.5095	0.2756
Meat (in total)	0.1989	0.4821	0.3441	0.2504	0.1821	0.0985
Fish (in total)	0.5167	1.2521	0.8936	0.6504	0.4731	0.2559
Milk	0.0239	0.0579	0.0413	0.0301	0.0219	0.0118
Yoghurts and dairy products	0.6679	1.6185	1.1551	0.8408	0.6115	0.3308
Cheese (in total)	0.402	0.9741	0.6952	0.5060	0.3680	0.1991
Oils and other vegetable fats	0.1175	0.2849	0.2033	0.1480	0.1076	0.0582
Animal fats	0.2933	0.7107	0.5073	0.3692	0.2685	0.1453
Fruit (in total)	0.4405	1.0676	0.7620	0.5546	0.4034	0.2182
Vegetables (in total)	0.0984	0.2386	0.1703	0.1239	0.0901	0.0488
Confectionery	0.4501	1.0909	0.7786	0.5667	0.4122	0.2229
Juicess (in total)	0.9723	2.3563	1.6818	1.2240	0.8903	0.4816

Source: Own elaboration.

Table 4. Food consumption elasticity factors for households total in 2009

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0151	0.0359	0.0249	0.0184	0.0139	0.0074
Cakes and bakery products	0.4331	1.0272	0.7107	0.5266	0.3960	0.2104
Meat (in total)	0.1739	0.4124	0.2853	0.2114	0.1590	0.0845
Fish (in total)	0.442	1.0484	0.7254	0.5374	0.4042	0.2148
Milk	0.0009	0.0022	0.0015	0.0011	0.0009	0.0005
Yoghurts and dairy products	0.5039	1.1952	0.8269	0.6127	0.4608	0.2449
Cheese (in total)	–0.3878	–0.9199	–0.6364	–0.4716	–0.3546	–0.1885
Oils and other vegetable fats	0.1077	0.2554	0.1767	0.1309	0.0985	0.0523
Animal fats	0.3190	0.7566	0.5235	0.3878	0.2917	0.1550
Fruit (in total)	0.4160	0.9867	0.6827	0.5058	0.3804	0.2022
Vegetables (in total)	0.0921	0.2185	0.1511	0.1120	0.0842	0.0448
Confectionery	0.4037	0.9576	0.6625	0.4909	0.3692	0.1962
Juicess (in total)	0.5608	1.3302	0.9203	0.6819	0.5128	0.2725

Source: Own elaboration.

Table 5. Food consumption elasticity factors for households in total in 2015

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0588	0.1336	0.0941	0.0694	0.0530	0.0297
Cakes and bakery products	0.4301	0.9766	0.6880	0.5075	0.3877	0.2169
Meat (in total)	0.1542	0.3501	0.2467	0.1820	0.1390	0.0778
Fish (in total)	0.5036	1.1434	0.8056	0.5943	0.4539	0.2540
Milk	0.0479	0.1088	0.0767	0.0566	0.0432	0.0242
Yoghurts and dairy products	0.2295	0.5211	0.3672	0.2709	0.2069	0.1158
Cheese (in total)	0.4293	0.9747	0.6867	0.5066	0.3869	0.2165
Oils and other vegetable fats	0.1171	0.2659	0.1873	0.1382	0.1056	0.0591
Animal fats	0.4646	1.0549	0.7433	0.5483	0.4188	0.2344
Fruit (in total)	0.5359	1.2168	0.8573	0.6324	0.4830	0.2703
Vegetables (in total)	0.1569	0.3562	0.2510	0.1851	0.1414	0.0791
Confectionery	0.3019	0.6854	0.4829	0.3562	0.2721	0.1523
Juicess (in total)	0.5332	1.2105	0.8529	0.6291	0.4805	0.2689

Source: Own elaboration.

Table 6. Food consumption elasticity factors for households in total in 2019

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0416	0.0443	0.0430	0.0412	0.0402	0.0395
Cakes and bakery products	0.5082	0.5617	0.5350	0.5056	0.4885	0.4639
Meat (in total)	0.0526	0.0577	0.0546	0.0509	0.0498	0.0511
Fish (in total)	0.9096	0.9346	0.9251	0.9096	0.8975	0.8801
Milk	0.0324	0.0340	0.0324	0.0319	0.0317	0.0323
Yoghurts and dairy products	0.7334	0.7796	0.7635	0.7407	0.7157	0.6797
Cheese (in total)	0.6696	0.7291	0.7035	0.6721	0.6433	0.6065
Oils and other vegetable fats	0.2175	0.2351	0.2242	0.2097	0.2097	0.2113
Animal fats	0.8375	0.7291	0.7035	0.6721	0.6433	0.6065
Fruit (in total)	0.4341	0.5269	0.4856	0.4374	0.4023	0.3582
Vegetables (in total	0.0697	0.0792	0.0747	0.0691	0.0655	0.0626
Confectionery	0.6697	0.6974	0.6879	0.6787	0.6610	0.6442
Juicess (in total)	0.6137	0.6772	0.6426	0.6207	0.5937	0.5461

Source: Own elaboration.

Table 7**.** Food consumption elasticity factors for households of emploeers in 2003

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0156	0.0400	0.0268	0.0199	0.0147	0.0074
Cakes and bakery products	–0.4458	–1.1418	–0.7657	–0.5691	–0.4195	–0.2113
Meat (in total)	–0.1469	–0.3762	–0.2523	–0.1875	–0.1382	–0.0696
Fish (in total)	–0.3959	–1.0140	–0.6800	–0.5054	–0.3726	–0.1876
Milk	0.0101	0.0259	0.0173	0.0129	0.0095	0.0048
Yoghurts and dairy products	–0.5528	–1.4159	–0.9496	–0.7057	–0.5203	–0.2620
Cheese (in total)	–0.3974	–1.0180	–0.6827	–0.5074	–0.3741	–0.1884
Oils and other vegetable fats	–0.0458	–0.1172	–0.0786	–0.0584	–0.0431	–0.0217
Animal fats	–0.2308	–0.5911	–0.3964	–0.2946	–0.2172	–0.1094
Fruit (in total)	–0.3775	–0.9669	–0.6484	–0.4819	–0.3553	–0.1789
Vegetables (in total)	–0.0432	–0.1107	–0.0742	–0.0552	–0.0407	–0.0205
Confectionery	–0.4338	–1.1112	–0.7452	–0.5538	–0.4083	–0.2056
Juicess (in total)	–0.8429	–2.1590	–1.4479	–1.0760	–0.7933	–0.3995

Source: Own elaboration.

Table 8. Food consumption elasticity factors for households of emploeers in 2009

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	–0.0003	–0.0008	–0.0006	–0.0004	–0.0003	–0.0002
Cakes and bakery products	–0.3917	–0.9473	–0.6556	–0.4908	–0.3580	–0.1862
Meat (in total)	–0.1542	–0.3730	–0.2582	–0.1933	–0.1410	–0.0733
Fish (in total)	–0.4085	–0.9881	–0.6838	–0.5119	–0.3734	–0.1942
Milk	0.0120	0.0290	0.0201	0.0150	0.0110	0.0057
Yoghurts and dairy products	–0.4981	–1.2048	–0.8338	–0.6242	–0.4553	–0.2368
Cheese (in total)	–0.3769	–0.9116	–0.6309	–0.4723	–0.3445	–0.1791
Oils and other vegetable fats	–0.0604	–0.1462	–0.1011	–0.0757	–0.0552	–0.0287
Animal fats	–0.3085	–0.7463	–0.5165	–0.3866	–0.2821	–0.1467
Fruit (in total)	–0.3823	–0.9247	–0.6400	–0.4791	–0.3495	–0.1817
Vegetables (in total)	–0.0481	–0.1164	–0.0805	–0.0603	–0.0440	–0.0229
Confectionery	–0.3924	–0.9491	–0.6568	–0.4917	–0.3587	–0.1865
Juicess (in total)	–0.5511	–1.3329	–0.9224	–0.6905	–0.5037	–0.2619

Source: Own elaboration.

Table 9. Food consumption elasticity factors for households of emploeers in 2015

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	–0.0407	–0.0952	–0.0671	–0.0501	–0.0380	–0.0212
Cakes and bakery products	–0.3657	–0.8561	–0.6040	–0.4505	–0.3420	–0.1906
Meat (in total)	–0.1183	–0.2770	–0.1954	–0.1457	–0.1106	–0.0617
Fish (in total)	–0.4516	–1.0570	–0.7457	–0.5562	–0.4222	–0.2354
Milk	–0.0065	–0.0153	–0.0108	–0.0080	–0.0061	–0.0034
Yoghurts and dairy products	–0.4443	–1.0401	–0.7338	–0.5473	–0.4155	–0.2316
Cheese (in total)	–0.4004	–0.9372	–0.6612	–0.4931	–0.3744	–0.2087
Oils and other vegetable fats	–0.0688	–0.1610	–0.1136	–0.0847	–0.0643	–0.0358
Animal fats	–0.3785	–0.8859	–0.6250	–0.4662	–0.3539	–0.1973
Fruit (in total)	–0.4882	–1.1427	–0.8062	–0.6013	–0.4565	–0.2544
Vegetables (in total)	–0.1186	–0.2777	–0.1959	–0.1461	–0.1109	–0.0618
Confectionery	–0.2658	–0.6221	–0.4389	–0.3274	–0.2485	–0.1385
Juicess (in total)	–0.5325	–1.2464	–0.8793	–0.6558	–0.4979	–0.2775

Source: Own elaboration.

Table 10. Food consumption elasticity factors for householdsof emploeers in 2019

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0445	0.0476	0.0468	0.0457	0.0440	0.0425
Cakes and bakery products	0.4843	0.5293	0.5073	0.4870	0.4684	0.4417
Meat (in total)	0.0425	0.0410	0.0390	0.0376	0.0386	0.0396
Fish (in total)	0.9546	0.9898	0.9878	0.9837	0.9837	0.9758
Milk	0.0268	0.0278	0.0267	0.0266	0.0265	0.0266
Yoghurts and dairy products	0.7361	0.7779	0.7660	0.7508	0.7185	0.6766
Cheese (in total)	0.6784	0.7309	0.7163	0.6888	0.6585	0.6072
Oils and other vegetable fats	0.1737	0.1834	0.1784	0.1692	0.1706	0.1692
Animal fats	0.8900	0.9179	0.9072	0.8900	0.8734	0.8606
Fruit (in total)	0.4068	0.4823	0.4571	0.4220	0.3843	0.3270
Vegetables (in total)	0.0617	0.0670	0.0658	0.0629	0.0599	0.0546
Confectionery	0.6680	0.6870	0.6773	0.6680	0.6589	0.6329
Juicess (in total)	0.6460	0.7093	0.6830	0.6586	0.6241	0.5712

Source: Own elaboration.

Table 11**.** Food consumption elasticity factors for households of pensioners in 2003

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0908	0.2130	0.1374	0.1044	0.0809	0.0517
Cakes and bakery products	0.6376	1.4951	0.9644	0.7330	0.5676	0.3632
Meat (in total)	0.2639	0.6189	0.3992	0.3034	0.2350	0.1503
Fish (in total)	0.5599	1.3129	0.8468	0.6437	0.4984	0.3189
Milk	0.1413	0.3314	0.2138	0.1625	0.1258	0.0805
Yoghurts and dairy products	0.6646	1.5584	1.0052	0.7640	0.5916	0.3786
Cheese (in total)	0.3997	0.9373	0.6046	0.4595	0.3559	0.2277
Oils and other vegetable fats	0.2194	0.5145	0.3319	0.2522	0.1953	0.1250
Animal fats	0.3455	0.8102	0.5226	0.3972	0.3076	0.1968
Fruit (in total)	0.5378	1.2611	0.8134	0.6183	0.4788	0.3063
Vegetables (in total)	0.1934	0.4535	0.2925	0.2223	0.1722	0.1102
Confectionery	0.5075	1.1901	0.7676	0.5834	0.4518	0.2891
Juicess (in total)	0.9116	2.1377	1.3789	1.0480	0.8116	0.5193

Source: Own elaboration.

Table 12. Food consumption elasticity factors for households of pensioners in 2009

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0740	0.1621	0.1029	0.0808	0.0644	0.0418
Cakes and bakery products	0.5757	1.2607	0.8004	0.6287	0.5004	0.3250
Meat (in total)	0.2657	0.5819	0.3695	0.2902	0.2310	0.1500
Fish (in total)	0.5714	1.2512	0.7944	0.6240	0.4967	0.3226
Milk	0.0724	0.1585	0.1006	0.0790	0.0629	0.0409
Yoghurts and dairy products	0.6340	1.3885	0.8815	0.6924	0.5511	0.3580
Cheese (in total)	0.4742	1.0384	0.6593	0.5179	0.4122	0.2677
Oils and other vegetable fats	0.2124	0.4651	0.2953	0.2319	0.1846	0.1199
Animal fats	0.4082	0.8940	0.5676	0.4459	0.3549	0.2305
Fruit (in total)	0.5897	1.2914	0.8199	0.6440	0.5126	0.3330
Vegetables (in total)	0.2085	0.4567	0.2900	0.2278	0.1813	0.1177
Confectionery	0.5232	1.1459	0.7275	0.5714	0.4549	0.2954
Juicess (in total)	0.5749	1.2589	0.7993	0.6278	0.4997	0.3246

Source: Own elaboration.

Table 13. Food consumption elasticity factors for households of pensioners in 2015

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.1011	0.2189	0.1403	0.1088	0.0882	0.0578
Cakes and bakery products	0.5668	1.2264	0.7864	0.6095	0.4942	0.3239
Meat (in total)	0.2471	0.5347	0.3428	0.2657	0.2155	0.1412
Fish (in total)	0.6101	1.3202	0.8465	0.6561	0.5320	0.3487
Milk	0.1368	0.2960	0.1898	0.1471	0.1193	0.0782
Yoghurts and dairy products	0.5939	1.2851	0.824	0.6387	0.5179	0.3394
Cheese (in total)	0.4711	1.0195	0.6537	0.5067	0.4108	0.2693
Oils and other vegetable fats	0.2073	0.4486	0.2877	0.2230	0.1808	0.1185
Animal fats	0.5650	1.2227	0.7840	0.6077	0.4927	0.3
Fruit (in total)	0.6771	1.4651	0.9395	0.7282	0.5904	0.3870
Vegetables (in total)	0.2415	0.5225	0.3350	0.2597	0.2106	0.1380
Confectionery	0.4186	0.9058	0.5808	0.4502	0.3650	0.2393
Juicess (in total)	0.6071	1.3137	0.8424	0.6529	0.5294	0.3470

Source: Own elaboration.

Table 14. Food consumption elasticity factors for households of pensioners in 2019

Food product	Total	Quintile group				
		I	II	III	IV	V
Bread and cereals	0.0372	0.0358	0.0328	0.0322	0.0323	0.0322
Cakes and bakery products	0.5849	0.6545	0.6050	0.5772	0.5679	0.5384
Meat (in total)	0.0491	0.0546	0.0495	0.0468	0.0477	0.0476
Fish (in total)	0.8758	0.9068	0.8924	0.8758	0.8598	0.8418
Milk	0.0222	0.0233	0.0220	0.0217	0.0216	0.0228
Yoghurts and dairy products	0.8199	0.8664	0.8304	0.8096	0.8096	0.7827
Cheese (in total)	0.6992	0.7653	0.7213	0.6954	0.6730	0.6503
Oils and other vegetable fats	0.2261	0.2500	0.2285	0.2158	0.2180	0.2203
Animal fats	0.8509	0.8928	0.8653	0.8439	0.8371	0.8193
Fruit (in total)	0.5232	0.6343	0.5591	0.5132	0.4925	0.4513
Vegetables (in total)	0.0766	0.0910	0.0802	0.0742	0.0720	0.0691
Confectionery	0.7895	0.8215	0.7957	0.7895	0.7834	0.7599
Juicess (in total)	0.5510	0.5961	0.5601	0.5570	0.5227	0.5096

Source: Own elaboration.

Joanna Szwacka-Mokrzycka – Full Professor of Social Sciences, head of Department of Development Policy and Marketing Institute of Economics and Finance, Warsaw University of Life Sciences (SGGW-WULS). Author or co-author of above 150 scientist publications, 14 monographs. Research interests: competitiveness of the food industry in Poland after Poland's accession to the European Union; modern marketing rules and mechanisms; current trends in food consumption in Poland; models of food consumption in Poland. Member of editorial committees and program councils of national and international scientific jour-nals, initiator and co-organizer of many national and international conferences. Cooperates with numeros research centers in Poland and abroad. Repeatedly awarded for scientific, organizational and teaching achievements**.**

Baiba Rivza – Doctor Habilitus of Economic Sciences, Latvia University of Life sciences and Technologies. Full member of the Latvian Academy of Sciences, Secretary General of the Academy, Leader of National Research Program Project INTERFRAME, Ex-minister of Education and Sciences of Latvia, Ex-member of the Parliament of Latvia. Scientific advisor for 26 doctoral thesis, of which 21 have been to date defended. Research fields: the fourth industrial revolution, digitalization, tools of digitalization, regional economics, cultural heritage. 64 scientific research papers included in the Web of Science database and 34 in the Scopus database in the last 10 years. Academic Advisory Board (EASAC) expert of the European Academy of Sciences in the field of economics. Co-author of the research „Circular economy: a commentary from the perspectives of the natural and social sciences" (www.easac.eu). At present, an expert of Latvian Council of Science, chair of the Latvia Social Sciences Expert Commission.

Marzena Lemanowicz – Assistant Professor at the Department of Development Policy and Marketing, Institute of Economics and Finance, Warsaw University of Life Sciences (SGGW--WULS). Scientific and research interests focus on consumer behaviour, including food and tourism mar-ket, with particular emphasis on contemporary consumer trends, food marketing, as well as the subject of integration processes in agribusiness. Author and co-author of 90 scientific publica-tions. Participant of many scientific national and international conferences i.a.in Germany, the Netherlands, Greece, Portugal, Spain, Slovenia, Latvia and Italy. Member of the editorial committee and scientific council of many international journals. In the years 2009––2016, head of the Division of Regional and European Studies at Faculty of Economics Sciences (SGGW-WULS). Member of the Economics and Finance Discipline Council, Program Council of the Faculty of Food Technology and other institute and departmental committees.

Evija Uljanova – PhD student at the Faculty of Economics and Social Sciences, Latvia University of Life Sciences and Technologies. Her research links with cultural heritage and gastronomic heritage.