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OPTIMIZATION MODEL FOR SUSTAINABLE FOOD SUPPLY BASED ON CONSUMER BEHAVIOUR TYPOLOGY. THE CASE OF THE CHISINAU URBAN AREA

The feature of a particular type of consumption that has developed over time at regional level has led to the development of certain characteristics of consumer behaviour that originate from structurally non-congruent regions. In this context, this study aims to develop a consumer behaviour optimization model, in order to design a sustainable supply as a stability factor for quality-focused food policies. The main objectives of the study focus on: an interpretative analysis of the specialist studies and of the present legislation both in Moldova and in the European Union in terms of food quality policies; an elaboration and application (between November 2018 and January 2019) of a questionnaire on a representative sample from among the population of the capital of Moldova – Chisinau; outlining the typological profile of the consumer; an optimisation of the typological profile of consumption by the reducing food risk factors. The findings refer to the elaboration of an optimisation model that can be used by producers for developing and ensuring the sustainable product offer on the food market.

Keywords: consumption, behaviour, sustainable supply, food traceability, food safety and security
JEL Classification: M10, P46, M14
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1. INTRODUCTION

The recession and economic volatility make consumers pay more attention to their personal finances. Yet the existing cultures or traditions in certain areas or countries are hard to give up regarding certain products, even if they do not legally meet those requirements which ensure the security and complexity of nutritional policies recognized and promoted by the international

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and European standards, including their sustainable aspects. Ensuring food security is a fundamental obligation of the state that must manage resources rationally by developing effective policies in order to avoid the risks and threats for consumers, which apparently are still not well defined in Moldova. For this particular reason, one can say that the food market does not guarantee the food security of this country's population.

Although the agricultural area of Moldova exceeds by 2–3 times the norms covering the food safety requirements, in accordance with the physiological norms of consumption, the agricultural production volume structure does not provide the population with the necessary food. Thus, in January 2018, the consumer information law on food was adopted in order to ensure a higher level of consumer protection (Official Gazette of Moldova, 2018).

In this context, it is important to analyse to what extent Moldova implements concrete activities, strategies and policies that are systematically and objectively used in order to shape consumers' behaviour regarding their decisions to purchase certain foods of a certain quality from a particular market. It is also important to analyse to what extent they are informed or have the necessary tools regarding the requirements or characteristics that a product should have in order to be considered a quality product which is able to enhance the consumer's well-being.

Promoting well-informed food consumption in relation to the entire population of Moldova must become a priority as a national strategy to be included in an intensely publicised national programme that will guide consumption and educate the consumer on nutritional policies. Based only on knowledge of the production and processing techniques of the agricultural products, and of the ethical and social implications specific to the production and consumption of food products can we impact on the way the population becomes aware of their own consumption (Bostan et al., 2014).

Usually, the consumer is taken into account as part of the regional market in terms of the destination of the distribution of merchandise based on his/her decision. Therefore, the consumer becomes a reference point for the producers continuously altering their production policies based on the consumption, by prioritising the consumers' options well ahead of the legislative constraints that are imposed by both the local and regional authorities. In Moldova the consumer is chiefly regarded from the point of view of the family. The individual consumer is supposed to have a minor impact as a result of the regional trends that promote family and social culture. A particular feature of the consumer from Moldova refers to their saving tendency as a result of scarce financial resources and the availability of traditional (manufactured) foods that exist on the market.

A significant indicator that characterises consumer behaviour is the average consumption. Thus, in terms of monthly income in Moldova, there is still a large sector of consumers with a low income (see https://www.unicef.org/media/55921/file/SOFI-2019-full-report.pdf).

Statistical data show that the monthly average living standard is barely covered by the monthly average income. Until 2012, earnings were below the minimum living standard, whereas lately, statistics showed that on average, incomes are moving well beyond the subsistence level required for survival. However, as for population categories, things look differently. In 2017, according to the National Bureau of Statistics of Moldova (NBS, 2017) the minimum living standard reached 1895.7 MDL[1] (equivalent of 97.27 euros) whereas the average minimum living standard in the EU28 was 890.51 euros (Fischer, 2018). However, during 2005-2008, there were some positive changes in improving and creating an appropriate legislative framework that correspond to the present exigencies in terms of the technical regulations and quality infrastructure in Moldova (Furdui, 2008). Since 2014, the average monthly salary has been 214 euros (4172 MDL). In 2018 it increased 1.47 times, up to 302 euros (6150 MDL). At the same time, it can be noted that in terms of other social groups such as children and the elderly, state benefits and pensions remain very low, or even below this limit.

In terms of sustainable supply, manufacturers from Moldova face challenges especially regarding the continuous supply of production from the logistic point of view, making sure it complies to a market that is influenced by global trading and ensuring an adequate flexibility of the product offer, itself related to the sustainable financial stress conditions (Gagauz et al., 2016).

The above-mentioned information is the basis for evaluating consumer behaviour which, in the authors' point of view, is characterised by the following main features:

- The absence in the market of a sustainable supply that is able to satisfy the existing demand (Milfont and Markowitz, 2016; Kostadinova, 2016; Sharma and Jha, 2017; Brach et al., 2018);
- Family consumption behaviour (Becker-Olsen et al., 2006; Aizen, 2008; De Pelsmacker et al., 2011; Islam and Zafar, 2017);
- The close connection between price and demand (Hing-Ling and Lau, 1988; Yao et al., 2008; Andreyeva et al., 2010; Ottosson et al., 2013);
- The protection of the local brands based on consumption (Luedicke et al., 2009; Pongsakornrungsilp and Schroeder, 2011; Prakash, 2013);

[1] The Moldovan Leu (MLD) is the national currency of the Moldova, issued by the National Bank of Moldova (BNM); exchange rate on 14.01.2020: 1 EUR = 19.3193 MLD.

- The refusal of consuming certain foreign products (this particular aspect will be further discussed in more detail in a special section) (Piron, 2000; Grunert et al., 2000; Orlandini, 2003; Guerrero et al., 2009; Sandıkcı and Ekici, 2009);
- The tendency towards the consumption of fine products (Atwal and Williams, 2009; Kastanakis and Balabanis, 2012; Kastanakis and Balabanis, 2014);
- Online consumption behaviour (Koufarsi, 2002; Park and Kim, 2003; Hsu and Lu, 2007; Splendiani et al., 2016).

Antonides (2017) states that consumer behaviour is "too complex to be described by one overarching theory, and that the research on consumers' behaviour should establish a balance between the generality of theory itself and the set of explanatory behaviours".

Based on the data that exist in the specialist field, the aim of this study is to develop a consumer behaviour optimisation model, in order to design a sustainable supply as a stability factor for quality-focused food policies. The sustainable supply corresponds to the consumers' preferences in terms of food safety. It also conforms to those conditions that adhere to the social policies by comprising the health risks of consumption.

Thus, the study focused on the following research objectives: 1) the interpretative analysis of the specialty studies and of the current legislation both in Moldova and in the European Union (the way they are connected to each other) in terms of food safety policies; 2) the elaboration and application (between November 2018 and January 2019) of a questionnaire among the population of the capital of Moldova – Chisinau, in order to identify the reasons or causes that lead to the ignorance of the policies of food safety and of the evaluation of the risk factors; 3) outlining the typological consumer profile in Chisinau; 4) optimising the typological profile of consumption by reducing food risk factors.

This requirement is based on the fact that from a geographical point of view, Moldova is situated at the 'confluence' between two different areas of influence (the European Union and Russia) that left their mark on food policies, and implicitly on the consumption behaviour of the population, which is why the authors considered of real interest the choice of Moldovan population to carry out the study. Another reason to focus on this population was the fact that literature summarises this topic rather than studies it thoroughly (Cazacu, 2016).

The findings refer to the following aspects. Firstly, the outline of the typological profile of the young population from the city of Chisinau was the

basis for examining the risks to which this target group is exposed, an aspect that was a real help in determining the ways to adjust these risks. So far, the authors have not found any study oriented on the profile or problems faced by food consumers in Moldova, specifically in the urban area of Chisinau. Secondly, this study develops a model of consumption behaviour optimisation, primarily for the younger population (18-35 years) because it is considered that the young and educated population represent an important segment with an increasing purchasing power, which is also of interest to the regulatory bodies in order to develop food policies. Finally, the results of the survey could help the producers orient their product offer according to consumer demand, an aspect that is the basis of balancing the demand-supply ratio, of ensuring the sustainable consumption of quality food products, but also of protecting the consumers in what considered the exposure to certain risks that may cause different illnesses or physiological imbalances.

In terms of its logical scheme, the study is structured in five distinct sections. The first offers a theoretical framework of both the hypothesis that were tested and a review of the already existing ideas in the specialist field, on those elements which from the point of view of food safety and security are linked to consumer behaviour as well as other significant elements. From this point of view, in order to offer a clearer perspective on the concepts, the authors created the second section (i.e. a literature review), that refers to a brief analysis of the phenomena that are based on the technique of dissociation, the correlation between consumer behaviour and accessibility, the consumers' ability to shop, the food quality and safety and the food security which, in turn, is influenced by the geographic position, the income of the population and by the regional absorption of the labour force. The third section refers to the research methodology used in the study including the data sources, the methods, the hypotheses and the details of the analysis itself. The fourth section presents the findings that refer to the consumption trends as well as their manifestations which make the producers face even more complex, if not difficult situations related to a sustainable supply. The authors highly value the findings of this study in terms of the optimisation of consumer behaviour based on the sensitivity analysis of the quality indexes related to the regional consumption analysis, in order to achieve the regional profile of sustainable supply. The study ends with a summary of the findings of the research as well as with an outline of future research trends and objectives regarding the boundaries of the study.

2. THEORETICAL BACKGROUND

There is probably no precise moment at which research into consumer behaviour began, since studying it has gone on ever since it had been noted. As Smith stated, "consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to only so far as it may be necessary for promoting that of the consumer" (Smith, 1776). At the end of the 19th century, the renowned but still severely criticised work of Thornstein Veblen opened up new insights in economics, exploring a segment of society described as non-productive and devoted to "conspicuous consumption" (Veblen, 1899). While it does not give a detailed explanation of everyday consumption, another influential work, *The Protestant Ethic and the Spirit of Capitalism* (Weber, 1905), explored the desirable and undesirable choices of behaviour based on the relationships between economics and spirituality.

In his work "Die Productions- und Consumptionsverhältnisse des Königreichs Sachsen", Engel (1857) analysed income-expenditure data for 132 working-class Belgian families. He found that the poorer the family, the greater the proportion of its total expenditure for the provision of food. Engel's Law is an explanatory model of the link that is established between the increase of income and the share of expenditure allocated to food. In essence, Engel's Law expresses diminishing returns in utility to consumption of food is a general law of consumption. With growth, demand for one or more products, but only a few at a time, begins with high income elasticity, and then declines as income rises much more. Increasing returns in consumption are followed by stable and then diminishing returns (Kindleberger, 1989, pp. 3-10). The early studies of Engel, completed by those of Working (1943) and Leser (1963) have become the core of microeconomic analysis.

The term 'food security' has two meanings: food security and food safety (Voeller, 2014). In the authors' opinion, one of the most important criteria of achieving food security refers to presenting food products offers in the market from the sustainability point of view. Since the former refers to the identification of issues relating to the safety of the distribution system or the availability of food that is able to meet basic needs, the latter refers to the lack of adverse effects on consumers' health. The transition from the first concept to the second can in practice be explained by one of the main changes that occurred in the agro-food policy of the European Union (EU) over the last few decades since the objectives of the Common Agrarian Policy (CAP) of the Treaty of Rome explicitly request a guarantee for security; in their redefinition, Agenda 2000, it is stated that "health, especially food security, is the main concern" (The Treaty of Rome, 1957; Commission of the European Communities,

1997; European Commission, 2017). This aspect is very well defined by the ample discussion around the concept of food development that the EU has adopted and has promoted within all the EU members through the general sustainability policy. Hence one can see a shift in attention from the amount of food available, to its quality that is considered primarily in terms of consumer health safety. However, one can state that food safety was not a specific objective for the CAP from the beginning. It was not highlighted based on two reasons: firstly, due to the absolute prevalence of quantity over quality based on the critical situation to overcome the food deficit; secondly, due to the major changes that occurred in agricultural production and the food processing industry.

Owing to the development of these areas, both the physical and the cultural distance between the producers of agricultural raw materials and the final consumer have increased (Feleagă et al., 2012; Mihaila and Jieri, 2018). This has led to the depersonalisation of the relationships that exist within the distribution system and, implicitly, to a shift in the nutritional content, in the information on the guarantee of the sold goods which previously had enabled an information exchange in certain stages between the seller and the buyer. Nowadays food is purchased through sales points in major organised distributors without direct contact between the producer and the consumer. Depending on the chosen distribution channel, this ensures to some extent, alongside with the product brand and label information, the guarantee that the product sold has the quality desired by the customer.

The definition of quality is not and cannot be ambiguous because, as it is already known, it must be defined according to the ability of a particular good or service to meet an express or latent need of the consumers and/or customers. From the viewpoint of the strong sensitivity of the end-users, especially in respect of certain qualitative features, there are particular concerns for food such as the nutritional content and the impact on health, as well as the generally accepted hygiene and health security aspects. This is also due to the fact that over time society has continuously manifested its ever-increasing quality requirements regarding agricultural production based on the need to produce foods with positive qualities, the need to apply the new concepts of multi-functionality, as well as from an environmental perspective, the rational use and the efficient evaluation of natural resources.

The quality concept has, over time, undergone a substantial evolution, driven by the consumers themselves demanding healthy, safe, nutrient-rich and environmentally friendly products. Changes have been made in the production and breeding processes, too. These are the main parameters that define and characterise quality itself. Apart from the perceived quality

(demanded by the consumer), there is also an objective quality which is defined by the manufacturing industry, and by the widespread distribution of these products, relating to food technology and security. Therefore, food safety in sustainability terms is at the core of the concept of quality for the consumer, producer and distributor. It is worth highlighting the fact that the objective quality is well-defined, measurable and verifiable especially in terms of certain standard parameters (that are closely related to the concept of food safety), while consumer demand is influenced by subjective factors and depends on the moment and/or the situation (Toti, 2016). The organoleptic quality of a food product is determined by the consumer's assessment of certain food features such as flavour and consistency that are perceived by sensory organs (sensory quality). These are subjective assessments visibly influenced by psychological, social and cultural factors (Petrini, 2003). The determining of the sensory profiles is useful for the interpretation of the complex phenomenon which is in a continuous transformation.

In more current terms, quality means the ability to meet the explicit or implicit needs, namely moral and material, social and economic needs that characterise civic and productive life. They manifest themselves as non-generic but concrete and measurable requirements, through the appropriate regulatory and standardisation processes (Thione, 2005). It is known that the chemical/nutritional quality of a food product is defined by its nutritional capacity measured based on the macronutrient content. This can be interpreted both in quantitative terms depending on the amount of the chemical energy that food produces, and from a qualitative point of view depending on the combination of the nutrients it contains. Moreover, the choice of the raw materials is of primary importance and it must be guaranteed at each level of the manufacturing process, e.g., the presence of the factors that may affect the nutrient content of a food product, such as heat that distorts proteins by having a direct impact on the loss of their biological properties. This requires the existence of a proper conservation/distribution process that has a fundamental role in guaranteeing the chemical/nutritional quality of the food product (Cappelli and Vannucchi, 2005). It is also worth mentioning the European Commission's concern about food quality and security. A new common methodology has just been launched that helps comparing the quality of food products within the EU. Thus, the Joint Research Center (JRC) of the European Commission's Science and Knowledge Service has developed a common methodology to enable the national consumer protection authorities to conduct tests to compare the composition and features of food products sold in similar packages within the Union. The JRC has also presented the methodology for improving the functioning of the food chain (JRC, 2018).

In a growing body of literature, there is an on-going research interest in food policies and food security policies (the analysis and modelling of consumer behaviour) taking into account those factors that are generated by sustainable growth and the quality of life (Mateş et al., 2013; Lupan and Cozorici, 2015; Tulvinschi, 2015; Istrate et al., 2017; Chirilov and Mihaila, 2017). As far as the research domains are concerned, the authors selected only the following areas: economics, management, planning development, nutrition and dietetics, agricultural economics policy, business, food sciences technology, operations research management sciences, horticulture and business finance (see Figure 1).

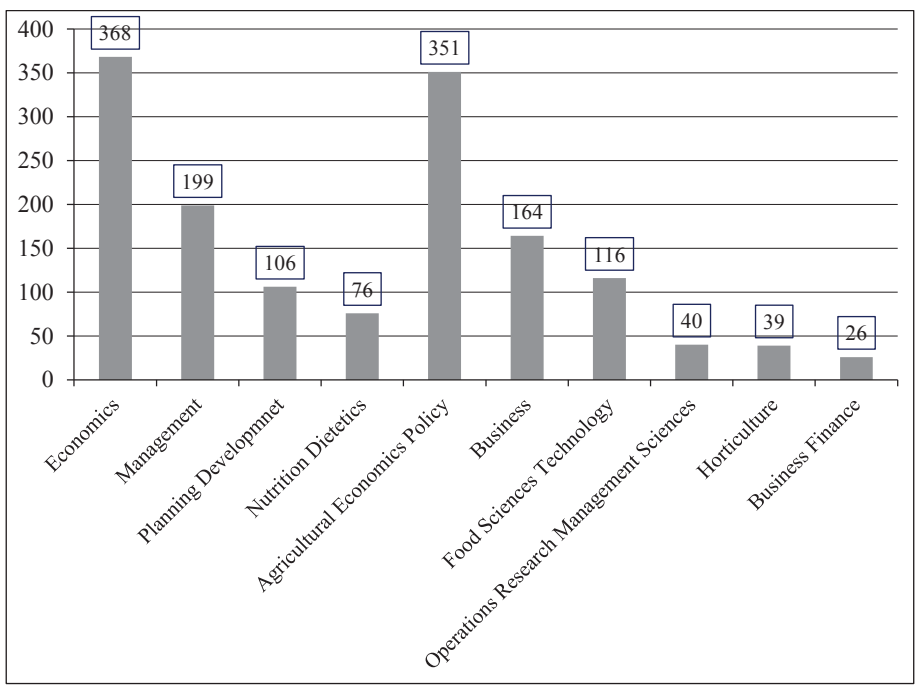


Fig. 1. The number of articles published on the Web of Science on food safety and food quality between 1988 and 2018 by main research areas

Source: ISI Web of Science Core Collection, 2018.

Thus, an analysis of how the number of publications in the ISI Web of Science Core Collection has grown confirms the importance of the topic, while the multitude of research fields is astonishing and they are very different

from each other. An apparently significant signal is that the academic environment has suddenly become interested in food quality and security especially since the 1980s. An analytical insight, as part of an analysis into the relevant work (that is linked to this topic) published in the ISI Web of Science can be found below (see Table 1).

As far as the system of rules governing food safety and quality both at the level of the European Union and also in other countries of the world is concerned, it is broadly layered, especially from the point of view of the quality of products and quality assurance systems at an economic entity level which they can adopt in order to ensure their own success (Pina et al., 2008; Mokrejšová, 2018).

Taking into account the above-mentioned main legislative points that exist in Moldova and within the European Union, as well as the features of the consumer behaviour as shown in the literature, one can observe that the efficient management methods of the financial resources as a result of consumption behaviour can be linked to the optimisation of consumer behaviour based on the use of several methods that are closely connected with the marketing strategy. This can be achieved by describing solely what is perceptible in a product, in terms of responses, i.e., the way consumers are reacting (Bertuccioli, 2005). Therefore, in order to optimise the relationship between the consumer and the identity/quality of the food, it is important to examine Figure 2 below:

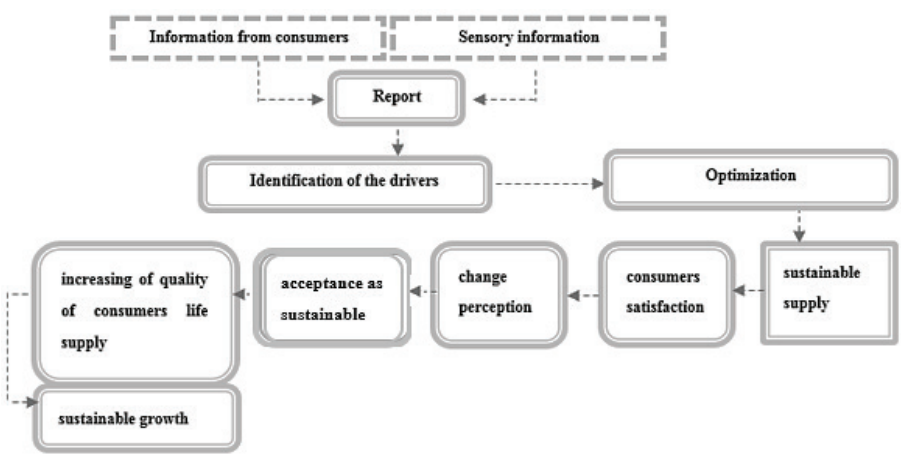


Fig. 2. Optimizing the relationship between the consumer and the quality of food products

Source: based on Bertuccioli, 2005.

In order to support the viewpoint of this study by taking into account the literature, the authors analysed the most important studies that focus on the sustainable supply and consumer behaviour related to the specific features of the food policies and food safety.

The Engel-Kollat-Blackwell model, originally proposed in 1968, has undergone many revisions since then. This model is considered to be one of the best-known representations of consumer behaviour in line with a marketing approach. It describes consumer behaviour as a process that takes place over time. According to the model, the product information may affect the decision regarding the purchase of the product. At the same time, it describes the specific variables that explain the consumer's decision-making process, without referring to the nature of the functional relationships between them, to how the process can be broken down and to the effect that these variables exert. Engel et al. (1987) used the Fishbein model to explain how consumers evaluate alternatives. This model is based on the hypothesis that the global attitude towards a particular object produces the intention to adopt a certain behaviour based on a) personal beliefs about the consequences of the behaviour itself; b) assessing the importance of these consequences and taking into account the influence exerted by the regulatory guidelines of the social groups of belonging and reference.

The authors mainly relied on Reyes' methodology (Reyes-Menendez et al., 2018) in order to construct the table given below. The purpose of this study is to perform a mathematical review of the above-mentioned studies on which statistical techniques are applied in order to combine the results obtained from homogeneous studies on the same subject. The results of the previous studies are presented in Table 1.

Among other relevant studies, Chen et al. (2018) highlighted that food security is in a direct relationship with the geographic position, the population's income, and regional workforce absorption capacity. The model suggested by the authors is a multidimensional approach which indexes, at the 2014 level, many indicators such as food availability, safety and quality, and financial allocations for food consumption. This leads to a feasible method of analysing consumer perception in relation to food security for the prevailing data of 110 EIU (Economist Intelligence Unit) countries.

In order to understand the reasons that led to the change in consumer behaviour towards food, it is necessary to investigate the main economic, social and cultural factors that have an impact on food consumption. According to Engel et al. (1987), consumer behaviour can be defined as the set of activities that a person or organisation carries out from the moment a need arises until

Table 1. Previous research regarding the stability-generating elements on food and nutrition politics related to consumer behaviour and other significant elements

Author	Phenomenon studied	Aim	Results
Chen et al., 2018	H-DEA vs. food security / hierarchical data envelopment analysis (H-DEA) approach	A hierarchical DEA (H-DEA) approach to endogenously assign weights in order to aggregate the sub-indicators for the Global Food Security Index (GFSI) created by the EIU.	Using affordability, availability, and quality and safety as variables, the results show that although the ranking is not significantly different from that of the EIU, the optimal scores and weights differ by income levels.
Venus et al., 2018	Food quality vs. non-GMO food labelling	Finding how potential incongruent interests of the various stakeholders that set the private production and certification standard may have incentivized firms to adopt the non-GMO standard in the initial stage after the introduction of the labelling option.	The results show that firms with more suppliers were more likely to adopt the multi-stakeholder standard or to stay conventional if their perceived risk of reputation loss and liability issues for non-GMO production were higher; firms with lower perceived risks were more likely to comply solely to the public standard for non-GMO labelling.
Lusk and McCluskey, 2018	Food consumer choice vs. food policy	Analysing the issues related to dietary-related diseases and the efficacy of policies designed to improve dietary choices, trust in the food system, acceptance of new food and farm technologies, environmental impacts of food consumption, preferences for increased food quality, and issues related to food safety.	The study identified a number of emerging societal issues related to food consumption and demand for which agricultural and applied economists have key roles to play.
Ali et al., 2018	Nutrient availability vs. food security; households vs. income and nutrient availability	Explore the relationship between income and nutrient availability for households in Nepal; relationship between income and the availability of a broad range of macronutrients and micronutrients; the way the nutrient demand changes as households increase their caloric consumption.	Results suggest that income transfer or growth policies aimed at improving the income of the most malnourished households are also likely to improve nutrient availability to their members; policies aimed at decreasing income risk and related consumption risk are also likely to be beneficial for the nutritional status of nutrient poor households.
Dimitri et al., 2015	Federal nutrition benefits / Nutrition incentives / Food security	Assessing the impact of this type of incentive, i.e., matching food assistance benefit redemption at farmers markets, on the food consumption behaviour of economically disadvantaged consumers.	The study suggests that even though not all consumers increased their consumption of vegetables, nutrition incentives are an attractive intervention for the segment that responds positively; for the segment that responded positively, costly intervention is not essential; instead, the main cost is that of the nutrition incentives; distribution of nutrition incentives at farmers markets is an effective way to reach those already interested in healthy foods.

Source: authors' compilation.

the time when the purchase and subsequent use of the product takes place. Taking as a reference the analysis carried out by Belletti and Marescotti (1996), the eating habits of the modern consumer can be grouped into two broad categories based on socio-economic and socio-cultural variables. The first group of (socio-economic) variables refers to the changes that have taken place in the work organisation, to the demographic changes, and to those that have an appropriate economic nature.

In recent years the demand for food-related services has increased gradually, as time is an increasingly valuable factor for the consumer. Engel et al. (1987) stated that as the financial income of the individual consumer increases, the value of the latter increases and he/she will have to pay more to obtain it, because the economic value of the time is created in favour of its deficit.

Venus et al. (2018) estimated the amount of cash flows allocated through food security and nutrition policy programmes and the way they contributed to shaping objective and firm food policies at regional level. The research was based on the data and information collected from 3290 households. The data allowed to analyse and interpret the socially generated effect of transferring the money among those social classes affected by poverty. The authors showed that the implementation of social protection programmes impact contributes to the improvement of the consumption and the number of daily meals, together with an increase in the apparent caloric intake, which has a long-term effect in reducing the level of hunger of poor population (the calculated impact on the consolidated economic and agricultural policies). From the point of view of the impact on the economic and agricultural policies, the long-term change in the behaviour of the consumers included in social programs was proved, which, in the authors' opinion, means that the quality of the daily meal shows resistance to the economic stimuli. In line with the economic observations, the authors also developed concepts such as structural upgrading of food security, adequate nutritional policy planning and development planning.

Taking a much different view, Devin and Richards (2018) elaborated a theory on the relationship between corporate social responsibility (CSR) and food waste that increased the social responsibility at the level of retail managers having positive effects on improving food distribution, and the adoption of food policies that allow for sufficient reallocations to low-income populations of unsold products over a certain period of time. The research was based on the interview and questionnaire method, addressed to food retail businesses and food business processors in the primary sector (industrial food production).

By investigating how consumer choices on food are affected by habit-forming behaviour, public policy and the uncertainty of the risk from food

safety hazards and strategic interaction with food processors, some authors (Asgary, 1991; Oh, 2014) demonstrated that incorporating dynamics such as habit formation in the analysis of food demand can make estimation more reliable and help to explain the 'stickiness' in consumer demand behaviour.

Some experts (Dimitri et al., 2015; Marumo and Mabuza, 2018) focused their research on nutritional policies, namely on increasing the intake of vitamins and minerals and assessing their impact on the daily diet and consumer health. For example, the study by Marumo and Mabuza (2018) focused on the growth of fruit and vegetable consumption from the point of view of quantifying the impact on the increase in fruit and vegetable consumption by convincing the population from the urban environment to the quality and food safety components of these products. In this respect, they analysed the information on the market of these products, as well as the factors that determined that the dealers act accordingly in these markets. The model suggested by the above-mentioned authors is based on economic sustainability assumptions that are specific to the reference markets and processes to increase food safety and security by improving the quality of the daily diet.

Therefore, in order to understand the entire consumer behaviour in a given market, the knowledge and tacit abilities about how consumer behaviour and food security function should be studied more closely.

3. CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

The visible differences among salaries, pensions and prices are also added to this issue. Whilst not implying that people would desire better quality products, but that by having such scarce financial resources they jeopardize their own health due to the fact that they do not get enough vitamins or other nutrients necessary to lead a healthy lifestyle (Granzin et al., 1998).

For example, Pachkovskyy (2014) states that Ukrainians consistently spend approximately 90% of their income, over 50% of it on goods only. The decline of wellbeing has had an impact on the basic food consumption in the Ukrainian household. In the food basket of a Ukrainian citizen, dairy products and eggs make up 20%, vegetables and bread 10%, whereas fruit, meat and fish do not exceed 5% of the total allotted sum.

Other studies showed that, both in Armenia (Voskanyan and David, 2014) and in Kazakhstan (Baikova, 2013), there is a disparity in the need for food consumption. Bakery and dairy products, and vegetables rank in top position. This is a clear indication of the existence of a significant segment of population that cannot afford to have a balanced diet.

According to Huddleston et al. (2000), Russian consumers perceive differences in product quality based on country of origin and product necessity, but that consumer ethnocentrism does not have an effect on perceived product quality. Research on consumer behaviour in the former Soviet Republic, Leonidou and Katsikeas (1996) found that consumption / ownership rates for both consumable goods and durables are relatively moderate, with more innovative and technologically advanced products being less frequently used; despite their low disposable incomes, indigenous consumers are unlikely to accept unhealthy products.

From the same perspective, Morozova et al. (2016) confirmed the low living standards in some parts of Russia from the point of view of food consumption. The authors state that spending on food has increased in recent years by 40%. In this context, in Russia, the attention has shifted towards improving the daily consumption by increasing the consumption levels for almost all the food categories (Baikova, 2013). A doubling of the daily minimum fruit and vegetables consumption is desired, which calls for educating the population in this respect.

The comparative study by Horská et al. (2011) emphasizes the fact that the consumer perception in Slovakia of the quality of food products is influenced by factors such as: the hygiene of the food products, the products' safety, the taste and the safety system during the manufacturing process. The findings of the study also showed that the decisions of the Slovak consumer are influenced by the price of the product and not by its quality. This means that this behaviour is different from that in the Western Europe.

Therefore, this study takes the Silva et al. (2016) and Morozova et al. (2016) approach as a model, and focuses on identifying the typology of consumer behaviour towards the sustainable foods supply. The above-mentioned models will be used in the consumer behaviour optimisation model in the sense of being the basis for adjusting the model suggested by the authors in this study.

From the above arguments, the following hypotheses can be raised:

Hypothesis 1 (H1): *The inconsistency of the income per household represents a major risk factor of consumption in terms of food safety and security, affecting the sustainable supply, too.*

Hypothesis 2 (H2): *The objectiveness of the demand is closely related to the sustainable supply.*

Hypothesis 3 (H3): *The risk regarding the demand for foods that are meant to fulfil auxiliary needs is closely connected to the expenditure on the daily consumption, assuming that it does not adequately cover the basic needs.*

The establishment of these hypotheses was based on the progressive change of the perception given to the consumer, which is mainly understood as a need measured in terms of economic utility and subsequently considered or interpreted as an instrument of social attribution, until it becomes a social distinction made by the life-style choice.

The overall methodology and the measures to be taken are shown below.

4. MATERIALS AND METHODS

The purpose of this study is to develop a consumer behaviour optimization model, in order to design a sustainable supply as a stability factor for quality-focused food policies. In order to achieve the proposed aim, the authors opted for a quantitative research based on a questionnaire, since it is an easy and appropriate tool to collect information on consumer behaviour and the identification of influencing factors.

The authors designed a questionnaire of 24 open questions written in Romanian. The questionnaire was structured in three sections such as: demographic characteristics (age, family status, social status, level of education, average family income), the analysis of the food quality elements and their perception by consumers, as a factor for the modification of the consumption policies (label-decisional factor, institutional authority on consumer protection, reducing the food consumption as a result of consumer policy, the disability of product types, the food risks, understanding the typology of ecological products) and the elements for the consumption depending on the regional typology connected to the area where the questionnaire was used (the resistance to the changes in consumption politics, some reservations regarding the country of origin).

The questionnaire was designed with the aid of the Google Drive electronic platform and published online through social media. The authors chose to use this means of distributing the questionnaire in order to be able to address a large number of respondents and to collect as much informational volume as possible within a short period of time. The questionnaire was completed between November 2018 and January 2019 by 359 people, of which only 320 were used, on the grounds that they were completed in full. Data for this study were collected in the Republic of Moldova, particularly in its capital city.

The questions addressed to the respondents were formulated in order to obtain information on how the quality food policies are respected and perceived. In terms of data collection, the authors' intention was to use non-random sampling. In the construction of the sample used in the research, the authors applied certain inclusion and exclusion criteria. The inclusion criteria:

the sampling is based in principle on the population aged between 18 and 35, from the urban area, who are active in the online media regardless of gender. The exclusion criteria: the population living in the rural area, the population older than 35 years, the population that does not have Internet access, and those individuals who declined the answers for all the questions from the survey.

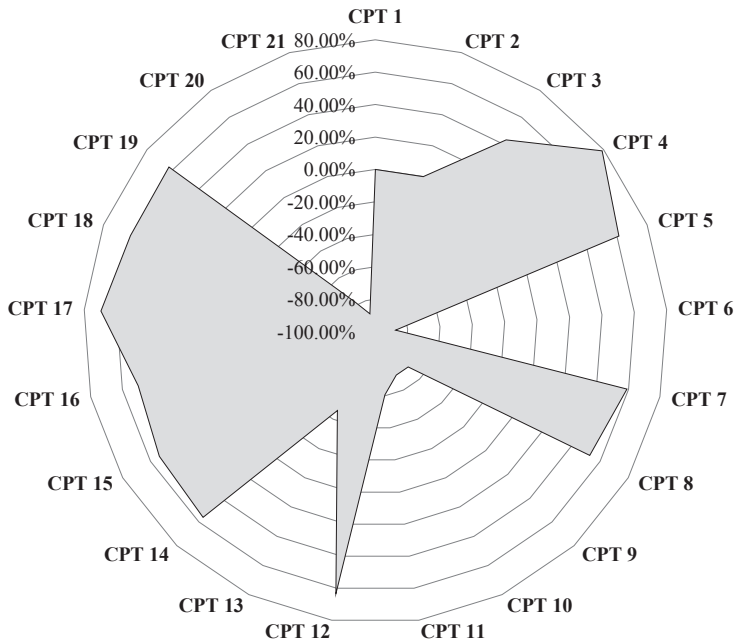
The authors believe that the sample that was used (320 individuals) is a meaningful one as it comprises approximately 5% of the population of the city. Based on Cochran's model (see http://www.raosoft.com/samplesize.html), the sample is meaningful if it refers within 3%-5% of the values out of the analysed segment of population of the studied population. The representation of the sample is based on Cochran's theory for 5%. The sample population of 320 individuals reaches the 5% threshold of representativeness in connection to the population living in the geographical area (Chisinau, the capital city of the Moldova, has 499,000 inhabitants; see https://www.indexmundi.com/moldova/demographics_profile.html).

The interpretation of the obtained answers allowed to identify the risk factors such as the barriers or impediments that the consumer faces in the process of purchasing food, from a certain supplier or producer, and to appreciate the level of satisfaction of the informational requirements offered, but especially by respecting quality food policies. Based on the above, it was possible to analyse the sensitivity of the quality indicators perceived according to the regional consumption typology (see Figure 3).

The typological profile identified is based on twenty-one components as shown in Figure 3 (CPT – typical profile components).

As can be seen in the figure above, CPT 6, 9, 10, 11, 13, 20, 21 are the components with low risk, for example for CPT21 which has a value of -88.5%, the component of risk is insignificant (≈11.5%). At the opposite end of CPTs with negative values there is CPT13 which corresponds to a value of -46% (practically the risk component is 54%). The same reasoning is applied to the justification of the positive values, related to the other components of the typological profile analysed within the model (i.e., CPT 1, 2, 3, 4, 5, 7, 8, 12, 14, 15, 16, 17, 18, 19). Basically, the higher the percentage positive values, the greater the risk that these components are exposed to. Negative values mean values on the reverse scale, respectively the trend of evolution of indicators with negative value, is inversely proportional to the trend of evolution of indicators with positive values.

In this respect the authors achieved the two-step optimisation model. The current typology was updated with risk prevention indicators so as to obtain a reduction or a cessation of the threat on the identified typology classes.



Note: The grey area represents the risk surface and includes the CPTs exposed to significant risks.

CPT 1 – Age < 25 years; CPT 2 – Higher education level; CPT 3 – Social status – active in the workplace; CPT 4 – Household family structure – Traditional; CPT 5 – Average family income per month > 250 euros; CPT 6 – Financial power / household – inconsistency maximum 2 members; CPT 7 – Resistance to changes in consumer policies – high; CPT 8 – Reducing food consumption as a result of consumer policy – dairy, white meat; CPT 9 – Use of product quality and safety information – Label – No; CPT 10 – Using stimuli to confirm product quality and safety – Taste – Yes; CPT 11 – Interest in information on product quality and safety – Expiry date; CPT 12 – Attitude towards consumer information process – Label; CPT 13 – Precaution towards the country of origin – EU Countries; CPT 14 – Food risk perception – Unsecured (street) trade; CPT 15 – Traceability of the institutional authority in the field of consumer protection – Consumer protection; CPT 16 – Food traceability of products perceived by the population – Correct perception; CPT 17 – Understanding the typology of ecological products – Yes; CPT 18 – Location used to make purchases of consumer products – Specialized sites; CPT 19 – Qualitative difference in consumption structure – Pro health; CPT 20 – Desirability of product types to meet primary needs – Food products; CPT 21 – Financial allocation for food consumption – Below 50%.

Fig. 3. The typological profile of the consumer based on the questionnaire study before optimization

Source: authors' projection.

In the first optimization step the following equation was applied:

$$O_1^{`} = \sum_{i=1}^{n} O_{1i} f_i = \sum_{i=1}^{n} (\max(T_i))_{1i} f_i \quad (1)$$

so that

$$\lim_{n\to\infty} \left(O_1^{`} \prod_{i=1}^{n} (r_i) \right) \to 0 \quad (2)$$

where T_i – possible regional typology, $O_1^{`}$ – identified regional typology, r_i – risk, f_i – influence factors for the typology adjustment in order to bring them into the minimum risk area.

The resulting values were compared with the desired situation at the lowest expected level, and the difference in the impact coefficients was modelled based on the most favourable food policies in order to reach the proposed desirability level.

5. RESULTS

The results obtained based on the collection of the processed data of the answers to the questionnaire reveal that the sample consists of 64% of the persons aged 18-25 years and 36% of the adult population aged between 25-35 years. The level of education specific to the tested sample is high, the majority of the respondents being enrolled in the higher education system in the city of Chisinau, while 12.81% of the analysed population participate in doctoral or postgraduate studies in different fields of activity (see Table 2).

According to the respondents' answers, based on the overall representativeness of the options for responding to social status questions, it seemed that the average trend of the sample reflects the social position of the young population involved in the educational process (40.4%) and their preoccupation to contribute to the family income by providing earned income (43.1%). The family structure to which the majority of respondents belong to is the traditional type, namely a family of husband, wife and their children (78.8%). A small part of the sample declared itself as belonging to a single parent family (5.3%), whereas the rest of the population of the sample is not part of family groups (15.9%).

Table 2

The consumers' behaviour matrix based on disseminating the results of the questionnaire on indicators and impact thresholds

Age	18-25 years old	64.00%	Level of education	Secondary	32.00%	Social status	In educational training	40.40%
	26-35 years old	36.00%		Higher	55.20%		Active in the workplace	43.10%
Family	Monoparental	5.30%		Doctoral	12.80%		Inactive	16.50%
	Traditional	78.80%	Average family income	<250 euros	38.70%	Number of family members contributing to family income	Maximum 2	87.50%
	Individual without a family	15.90%		>250 euros	61.30%		More than 2 members	12.50%
Label - decisional factor	Yes	29.70%	Resistance to the changes in consumption	Big	59.10%	Reducing food consumption as a result of consumer policy	Red meat	47.40%
	No	70.30%		Small	40.90%		White meat	26.50%
Interest towards information on the label	Expiration date	60.60%	Taste - decisional factor	Yes	70.30%		Dairy products	26.10%
	Nutritional components	39.40%		No	29.70%	The process of informing the consumer	Label	63.40%
Precaution towards the country of origin	African countries	28.40%	Food risks	Unsecured (Street) trade	56.20%		Mass-media	35.00%
	Asian countries	25.60%		New products (untested)	28.80%		Others	1.60%
	Others	46.00%		Others	15.00%	Institutional authority on consumer protection	Consumer protection	53.80%
Food traceability of products perceived by the population	Right perception	50.00%	Understanding the typology of ecological	Yes	69.70%		Mass-media	14.10%
	Honesty	27.50%		No	30.30%		Distrust of authorities	32.10%
	Wrong perception	22.50%	The location for purchasing the products	Specialised places	62.20%	Disability of product types	Food products	78.10%
Qualitative difference in consumption structure	Pro heathy	62.80%		Semi-specialised place	14.70%		Clothes and accessories	12.90%
	Pro economic	37.20%		Non-specialised place	23.10%		Others	9.00%
Financial allocation for food consumption				Under 50%	88.50%			
				Over 50%	11.50%			

Source: authors' elaboration based on data collected from the questionnaire.

The average family income varies around 250 euros, according to the questionnaire. The respondents stated that this income was achieved by no more than two family members contributing to the family income (87.5%). For families with more than two family members contributing to the family income (12.5%), the average household income is in the range of 250–500 euros. This is caused both by the high-capacity household income earning as well as by family culture that is geared in this case towards a higher quality of consumption and increased consumer preferences based on significant financial gains. The results of our study were in line with the assertions of Engel's law of 1857. The resistance to changes in consumer policy (Have recent changes in consumer and food security policies changed your eating habits?) is high in the respondents' view (see Venus et al., 2018), so that 52.5% of the respondents said that they would not change their eating habits if food and food security policies were to change significantly. The reduction in

consumption of red meat is seen as possible by most respondents, 47.5% being inclined to change their habits in this regard if this would have an impact on their health. Unlike red meat, white meat and dairy products are more preferrable for 26.56% of the respondents, with 25.94% claiming they are more willing to change their consumption of white meat and milk rather than change the consumption of red meat (see Figure 4).

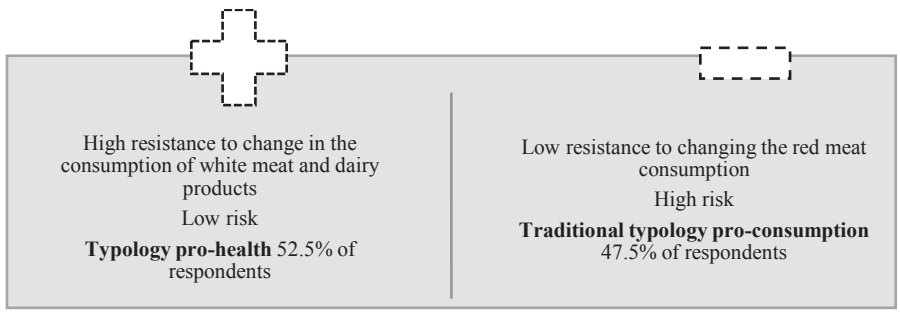


Fig. 4. Consumer typology based on pro-health attitude

Source: authors' elaboration based on data collected from the questionnaire.

As far as the decision (see Ali et al., 2018) regarding a good knowledge on a product is concerned, in the respondents' opinion this is an untapped option. In other words, 70.31% consider that nutritional information on the label is not a decision-making factor in the purchasing process. Instead, the taste of the products is decisive for 70.31%, as it is one of the main organoleptic factors in determining the consumers' behaviour (see Figure 5).

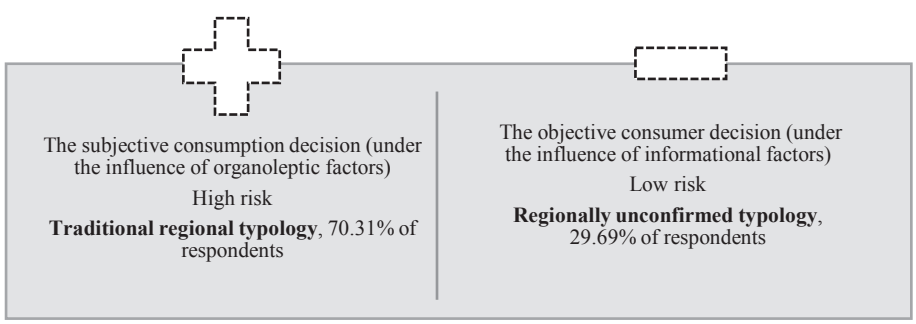


Fig. 5. Establishing the regional consumption typology based on the purchasing decision and related motivational factors

Source: authors' elaboration based on data collected from the questionnaire.

Even though the product label as a decision-making factor is not viewed from a positive perspective, however, interest in the labelling information regarding the expiry date is high (60.6% of the respondents). The nutritional component information is only accepted by 39.4% of the respondents, while they believe that the consumer information process is properly achieved through the correct labelling of the product (63.4%), whereas 35% consider that the information in the media (i.e., commercials) is important for the information process. Only 1.6% of the respondents have expressed their views on alternative channels of information used for consumer decision-making (see Figure 6).

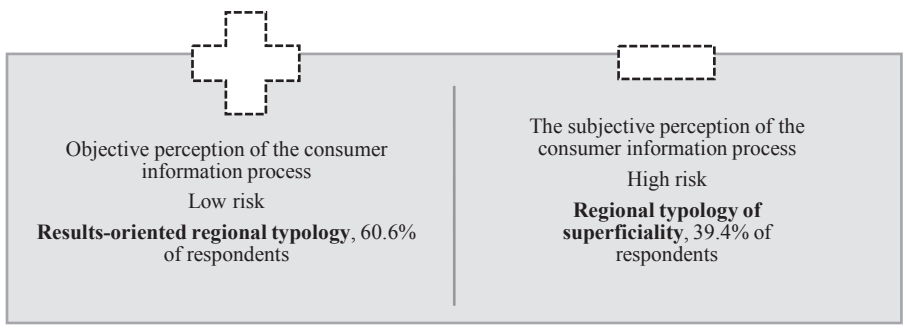


Fig. 6. The regional typology in terms of consumer information process

Source: authors' elaboration based on data collected from the questionnaire.

At the same time, some reluctance from the respondents to take precautionary measures towards the country of origin can be occasionally observed. Thus, from a declarative point of view, 33.13% show their preference for consumption of products of European origin, 28.44% for the products from African countries, whereas 25.63% are reluctant to consume products originating from Asian countries. As far as the food risks associated with unlicensed trade (on the street) are concerned, Lusk and McCluskey (2018) argue that they are seen as factors that hinder consumption (66.25%) while food-related risks of new products that were not tested in the market (see Figure 8) are reluctantly accepted by 33.75% of the respondents.

Consumer protection plays an important role in ensuring food security policies, but only 53.8% of the respondents believe that consumer protection could help in cases of a food security incidents. However, the authorities informing through media campaigns and related information channels represent the confidence option for 14.06%. The rest of the sample persons

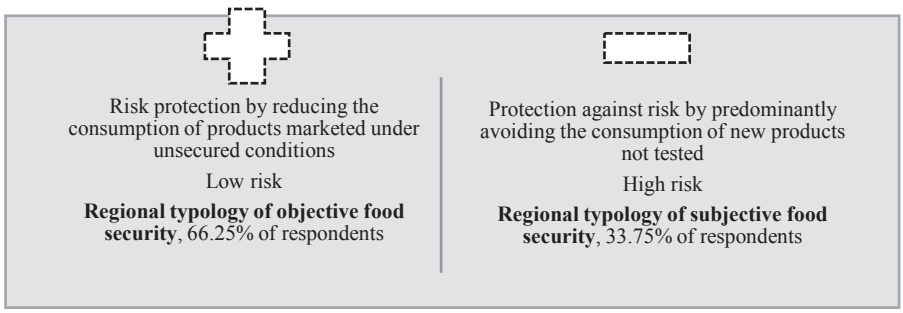


Fig. 7. The regional typology according to the risk protection attitude by the reduction of the consumption of products marketed under unsecured procedures

Source: authors' elaboration based on data collected from the questionnaire.

were distrustful of the authorities' inquiries into food safety incident notifications (32.19%). In terms of food product traceability perceived by the population, it is high, with 50% considering that the products are properly defined on the market by their features presented by the producer, by the shelf life and by the labelling process. Instead, the respondents were reluctant to trust the information provided by the producer, so that only 27.5% believe that the producer's sincerity in conveying the information on the label is genuine. This erroneous perception is viewed by the respondents with higher education as a residual phenomenon that has an insignificant incidence on consumer behaviour. Most of the respondents possess sufficient knowledge to express an opinion on consumer choices.

It is also worth noting that the process of purchasing food is carried out in the specialist places for 62.2% of the respondents, less specialist places such as street markets and other forms of street trade being the option for 14.69% of the respondents, while 23% say they could buy products also from non-specialist places depending on the need for consumption. The qualitative difference in consumption patterns is pro-health, which means that 62.8% would rather eat healthy products even though their cost is higher. At the same time, food products hold a specific place in the respondents' consumption habits by ranking first among the desirable options (78.1%), while clothing and other goods for satisfying their current needs obtained only 21.9% of the responses. Basically, the financial allocation for daily food consumption is predominantly below 50%, which means that there is a consumer-level balance that is regionally defined (i.e., a balance between the financial allocation for food consumption and the financial allocation to cover current needs other than food based on family income declared by the household).

Table 3. The estimation of the influence factors' impact on the typology adjustment for the optimization

Desirable level	Component of the typological profile	Level achieved	Influence factors for typology adjustment	The impact of the factors
Financial power/ household – (high level) more than 2 members (12.5%)	Financial power / household	Financial power / household – inconsistent maximum 2 members (87.5%)	Consistent financial power – the time spent on purchasing and preparing healthy products.	Risk reduction of about 50%
Use of product quality and safety information – the label-Yes (29.7%)	Use of information that certifies the quality and safety of the product – the label	Use of information that certifies the quality and safety of the product – the label-No (70.3%)	Information on the benefits and adverse reactions to consumer health – verifiable information in the sense that it is possible to confirm the manufacturer's sincerity, possibly be recommended by specialist personnel for beneficial properties.	Risk reduction of about 40%
Using stimuli to confirm product quality and safety – taste-No (29.7%)	Using the stimuli that confirm the quality and safety of the product – the taste	Using the stimuli that confirm the quality and safety of the product – the taste-Yes (70.3%)	Brand or product trademark; area or country of origin; information that stimulates physiological reactions – better informing consumers about foods that have a beneficial impact on health; external stimuli such as colour, aroma, perfume, etc.	Risk reduction of about 60%
Interest in information attesting the quality and safety of the product – nutritional components (39.4%)	Interest in information attesting product quality and safety	Interest in information attesting product quality and safety – Expiration date (60.6%)	Correct information on maturity - correct information on how to pack and distribute that can alter nutrient content without hindering consumption	Risk reduction of about 50%
Precaution regarding the country of origin – African and Asian countries (54%)	Precaution regarding the country of origin	Precaution regarding the country of origin – EU countries (46%)	Existence of a well-defined normative framework for food security and food policy - association with the nature and the quantity of food consumed (possibly taking into account the nutritional regime)	Risk reduction of about 60%
Desirability of product types necessary to meet primary needs – clothing and accessories and more (21.9%)	Desirability of product types necessary to meet primary needs	Desirability of product types necessary to meet primary needs – Food products (78.1%)	Economic and financial power of the household – socio-economic factors; socio-cultural factors and the consumers' level of education	Risk reduction of about 40%
Financial allocation for food consumption – over 50% (11.5%)	Financial allocation for food consumption	Financial allocation for food consumption – under 50% (88.5%)	Economic consumption per household – frequency of obtaining sufficient financial income	Risk reduction of about 60%

Source: authors' research based on the data collected from the survey questionnaire.

In order to be able to design an optimization model of Moldovan consumer behaviour, an estimation of the impact of the influence factors that are needed for the adjustment of the above-mentioned typology needs to be implemented (see Table 3).

To compare the final values with the desired situation, namely the minimal required optimum, the impact coefficients for the final deviation that resulted from the dynamic observation of the evolution of the indicators was used. This operation was later modelled through statistical methods in order to level it off to the suggested desired level corresponding to the aim of the research (i.e., to design a new methodology to understand the factors which influence consumers' behaviour in Chisinau in direct relation with a sustainable supply).

To be able to respond to the 3th and 4th objective regarding the building up of a sustainable supply typology based on in-depth research, the authors quantified the typological profile by shifting the focus of the inflection point of the demand-offer curve when calculating the new inflection points based on the optimization of the sustainable supply for the entire consumption chain.

Table 4

The typology of the sustainable supply

Desirable level	Actual impact of desirable level	Multiply impact of sustainable supply (100% of impact factor)	Revised impact of desirable level	Revised vulnerability to increase the regional sustainable supply
Financial power / household	Lowest (12.5%)	1/50%	Medium (100%)	+100%
Use of product's quality and safety information – label-Yes	Low (29.7%)	1/40%	High (150%)	+150%
Using stimuli to confirm product's quality and safety – taste-No	Low (29.7%)	1/60%	High (66.67%)	+66.67%
Interest in information attesting the quality and safety of the product – nutritional components	Medium (39.4%)	1/50%	High (100%)	+100%
Precaution regarding the country of origin – African and Asian countries	Medium (54%)	1/60%	High (66.67%)	+66.67%
Desirability of product types necessary to meet primary needs – clothing and accessories and more	Low (21.9%)	1/40%	High (150%)	+150%
Financial allocation for food consumption – over 50%	Lowest (11.5%)	1/60%	Medium (66.67%)	+66.67%

Source: authors' research based on the data collected from the survey questionnaire.

Thus, the focus features of the study based on a direct observation of the optimisation procedures were used as a result of the growth of the wealth due to the reduction of the residual risk through implementing the sustainable supply. The findings are shown in Table 4.

The introduction of the model based on a sustainable supply leads to a growth of the wealth that varies between 67% and 150% according to the typological components, and the net growth that is closely connected to it. The key elements of sustainable supply that emphasise the growth of wealth were specifically identified by Antonides, 2017; Wilkins et al., 2002; Harris et al., 2000; Tregear et al, 1999; Rossiter, 2002; Fornari, 2006; Fabris, 2003. The novelty of this research refers to the use of concepts already applied in the specialist literature by building up the typology of sustainable supply based on research (questionnaire, statistical analysis, risk analysis etc).

On the basis of risk optimisation, according to the above Table 4, the following optimised typological table was designed (see Figure 8):

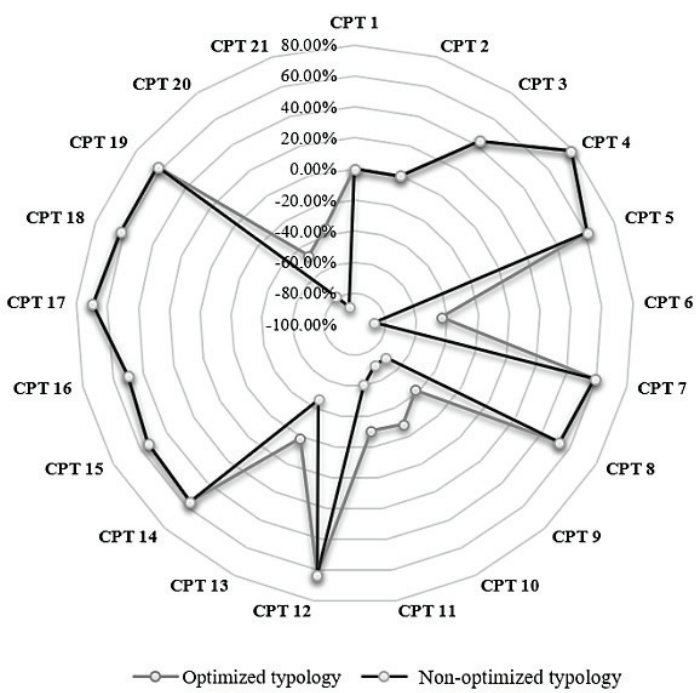


Fig. 8. The dynamics of consumption typology under the impact of influence factors for optimising the typological profile of consumer behaviour

Source: authors' projection.

As a result of this study, it was possible to outline the typological profile of consumer behaviour based on the regional typology by using the analysis of the data processed on the basis of the questionnaire.

Following the analysis of the results of the questionnaire, consumer behaviour which corresponds to a typological risk profile, was included in the risk class in terms of the following factors: the inconsistency of the financial power per household (H1: The inconsistency of the financial ability of purchasing on households represents a major consumption risk factor in terms of food security and safety); the deficiencies in the use of information attesting/ certifying the quality and safety of products in conjunction with the use of stimuli and organoleptic subjective factors to confirm the quality and safety of the product. Thus, there was a high risk of showing interest in information proving the quality and safety of products in conjunction with the food consumption constraints on products originating from the European Union countries (H2: The demand's objectivity is a direct cause of the sustainable supply. The high risk on the desirability of the types of products needed to meet primary needs through the prevalent financial allocation for food products compared to other categories such as social services, health, education, other current physiological needs combined with the financial allocation for food consumption in reduced rates from the family budget); (H3: The risk regarding the demand for those foods that are to meet the secondary needs are in a direct relation to the financial resources for the daily consumption if this fails to cover the basic needs adequately).

The typological profile of the Moldovan consumers' behaviour was subjected to the optimisation process through the sensitivity analysis of quality indicators that were perceived also on the basis of the study of the specialised economic literature through the assessment of the component risk reduction rates for the above-mentioned risk areas. Based on an economic optimization model, the final results allow for a real possibility of improvement of the consumers' behaviour, as well as for the further development of the study itself towards the adjustment of the macroeconomic impact factors aimed at the coordination of the typological profile with the performance indicators of the food sector.

The authors believe that the findings of this study can be of a real interest and an actual support for the food manufacturers from the point of view of ensuring a sustainable supply.

6. DISCUSSION

In December 2017 the government of Moldova adopted the "Food Safety Strategy for 2018–2022" which aims to continue and develop the provisions of the Food Safety Strategy for 2011–2015 in line with the Health Strategy and National Strategy for Agricultural and Rural Development. The main objective of this strategy is to "achieve a high level of food safety and consumer protection by taking into account the diversity of food supply, the adherence to external markets and by ensuring close and harmonious collaboration between central public authorities" (Official Gazette of Moldova, 2018).

The trade sector tends towards combining the pragmatic aspects regarding the economic return and productivity comprising the strategic aspects in terms of the sustainability and fruition of the competitive advantage within the top management performances during the entire trading cycle. In this process, a significant role is played by the technological progress that balances productivity and sustainability under the influence of the adequate development of the human resources (Council of Agricultural Research and Economics, Agriculture and Rural Development, 2017). The economic profit that is used as a performance exchange measurement manifests itself as a result of the strategic interest for sustainability. This interest thus shifts focus in terms of the economic advantage to the market's state of balance based on sustainability that enables it to achieve the main target of the marketing policy, namely the balance of the product offer-demand vs. the growth of the sustainable market. The conceptualisation of this particular type of interest focuses on sustainable supply as a source of a medium and long-term wealth (Sexton and Zhang, 2001).

A component part of sustainable supply refers to the analysis of creating the added value for the goods that are available for final consumption. This would bring about a major cognitive contribution both for the economic decision-makers and for the consumers themselves (Finizia and Merciai, 2012).

The rationing of the consumption resources in order to obtain the value added may be regarded as a key element for the success of sustainable supply. This kind of rationing is even more necessary as the phenomenon of market expansion has been limited by global trading through the competition mechanism. As a result, the traders are the only ones responsible for opting for the growth of their businesses (Frascarelli, 2012). As far as the food products are concerned, an expenditure worth 100 euros was estimated, out of which 27 euros are overheads (i.e., packaging, transportation and logistics, promotional costs), and only 3 euros represented the profit of the distribution

chain. Consequently, a reduction of the final price paid by the consumer might be considered more in terms of cutting down the prices (especially the external ones) rather than a reduction of the profit in view the latter's effects (Zaghi and Bono, 2011).

As far as the analysed market segment (for Moldova) is concerned, the study noted that there are some attempts at building up a sustainable supply at an early stage. It is mainly obstructed by the volatility of the macroeconomic stability, by the inconsistency of building up the added value and by the acute monetary instability in the region (Mocanu, 2010; Albu, 2017).

The strategic development of food products in Moldova is a top priority from the perspective of the long-lasting growth and the improvement of living standards. This development may also accelerate economic growth in order to properly operate the supply chain that is shown in Figure 9.

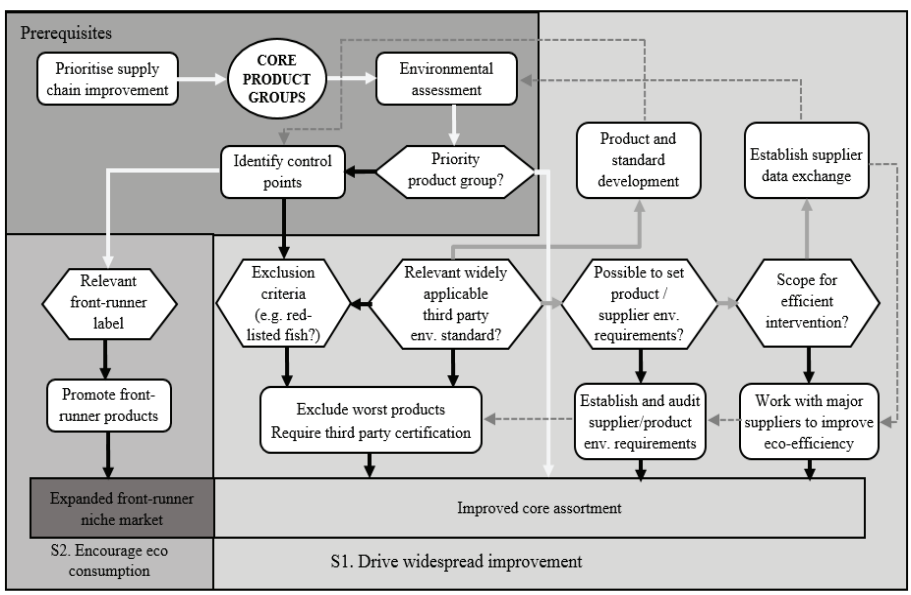


Fig. 9. The efficiency of the supply chain in Moldova

Source: based on Zaghi and Bono (2011).

In Moldova, "agriculture is the basic treasure of the national economy due to the fact that the other branches have close ties with agriculture". In this context, agriculture is one of the main pillars generating budget incomes and it requires appropriate regulatory measures (Tcaci and Bulgac, 2012). The lack of regulations leads to structural disparities.

The agro-food sector in Moldova makes up about half of the volume of exports. The main branches of regional specialisation are the wine industry, sugar, canned fruits and vegetables, natural juices, essential oils, etc. Most of the agricultural production is of vegetable origin, accounting for about 90% of the total volume of production. Moldova's agricultural potential can fully cover domestic demand, yet the decline in the agricultural sector in recent decades has caused a multitude of economic problems such as the non-use of available resources, the lack of jobs and skilled human resources, the migration of the population out of rural areas, and the underuse of the latest technologies to increase the agricultural production.

In order to reduce the economic disparities, it is necessary to introduce a system of business and budget analysis that are able to achieve the desired efficiency and hinder the aforementioned negative effects (Zlati and Antohi, 2018). In the absence of the implementation of sustainable measures, all these aspects could have a negative impact on satisfying the internal demand for agro-food products and on their penetration into foreign markets (Stihi and Zatîc, 2016). This can be regarded as one of the objectives of Agenda 2030.

Food security and sustainable agriculture can be achieved in Moldova by adjusting the inequality reduction model as a sustainable development (Ionescu et al., 2018; Zlati and Antohi, 2018).

The structure of Moldova's economy differs significantly from that of the Central and Eastern European economies, due to several inherent vulnerabilities. Between 2014 and 2016 the share of industry in the GVA (Gross Value Added) of Moldova decreased from 17% to 14%. The evolution of GDP is shown in Table 5. Compared to the EU countries, in the Central and Eastern European countries one-third of the added value is provided by the industrial sector.

This gap shows the low potential of Moldova's industry. The sector faces competition problems and does not have enough technological and human resources to undergo a more advanced development.

Table 5

The actual GDP growth and potential GDP, in %.

	2005–2006	2007–2008	2009–2010	2011–2012	2013–2014	2015–2016	2017–2018
Actual GDP	12.7	11	0.7	6.1	14.7	3.8	7.6
Potential GDP	9.5	9	8.4	8.1	7.8	7.4	7

Source: The annual report NBS, 2017.

As far as the consumption and the nutritional policies promoted in Moldova are concerned, the nutritional problems facing this country have a significant impact both on public health and the state's economic performance. Nutrition is a permanent effect factor that determines the improvement of metabolic processes, as food is the source and regulator of the trade exchange processes (Opopol et al., 2006; Artene et al., 2011; Virag et al., 2014). Thus, it is thought that in order to achieve those strategies for the improvement of the state of nutrition in Moldova, several groups of interventions are needed, particularly on the development of the legal framework and the enforcement mechanisms, the establishment of alliances at national and local level in the elimination of nutrition issues, the establishment of effective systems for the continuous monitoring of nutritional problems and the transformation of existing food habits into healthy behaviour leading to the elimination of nutrition problems in Moldova.

Sustainable consumption represents a virtual interaction between the consumer and the producer from the point of view of taking the full responsibility of a sustainable market. Consequently, sustainable consumption can be defined as an instrument which, on the basis of its re-orientation towards both the consumers' and the companies' interests, manages to build up a fair and balanced market where both the consumer and the company take on common goals. In this context, the result of this action creates the basis for consumer demand as well as for the company product offer to exercise freely and unconditionally their sustainability in the market.

Thus, in the case of companies, a good reputation means an improvement of their relationship with their clients who value their products and services. This is of the utmost importance and means the need to gradually promote and use those manufacturing methods that take into account the consumer requirements and environmental conditions. This change of perspective regarding the constant focus on the consumers' requirements can lead to obtaining significant benefits, whereas the focus on following the environmental policies contributes to cutting costs of services for energy, protection of environment and raw materials. The manufacturers' open, collaborative and involved attitude will enable a higher performance due to their more intelligent and generous work practice. In practice, an in-depth approach to the social and environmental challenges stimulates the innovative and risk management ability of the sustainable companies focused on meeting consumer interests by creating a sustainable supply for them (Mihaila, 2014). At an operational level, most of the experiences from the farming sector, especially from the agricultural market, have delineated the territorial perimeter that is the source for the supply of goods in order to guarantee "the source of the offer". From

this point of view, it is interesting to note that the meaning of 'local' is far from being clearly defined by consumers. It significantly varies from one individual to another and is mainly influenced by the social and cultural environment. The local perception may also make reference to the regional products or national products that originate from the area the consumer comes from (Wilkins et al., 2002). In the United States, for example, where perception in terms of distances is influenced by the large dispersion within the states, some of the consumers that took part in these studies define local goods as those originating from their own state, sometimes including the neighbouring states within this evaluation (Harris et al., 2000). As for the United Kingdom, the distinction of the so-called local territory is clearly marked less from the point of view of the clear administrative boundaries, but the historical routes that have the same socio-economic background (Tregear et al., 1999). In order to be able to consider this local offer as a sustainable one, it is important to emphasise the fact that the definition of sustainability needs to be more accurately and specifically worded in the sense that the aspects that comprise it need to be explained in more detail. This is due to the existence of a series of elements that limit its applicability, especially in terms of the possibility of using the concept in different situations. The representation of these opinions that are antagonistic to a compromise is not a simple one. Nevertheless, it can be a crucial step in building up an interpretation model based on reaching a product offer's sustainability level. In fact, the definition of the concept, also known as the construction definition in the field of marketing (Rossiter, 2002), is the basis for decision-making in terms of measurement. The evolution of companies' globalisation and internationalisation have led to a mixture of different cultures and traditions over time. This has already changed the features of the demand for goods and services within the national systems by enabling the development of some product formulas that are geared towards satisfying the ethnic needs (Fornari, 2006). One needs to emphasise the fact that these product formulas also need to include the quality features in order to confer its sustainability over time. The most important feature is the products' quality. In spite of the fact that quality is apparently an easy concept to understand, it is actually a very complex as it has been observed that it is difficult to formulate a standard definition devoid of ambiguity. Consequently, the authors insisted on taking into account its perceived quality, which basically refers to that quality that is perceived by the consumer. This is closely related with the ability of a product or service to meet the expressed requirements. Thus, primarily each and every product has to have a basic feature which is mainly linked to its satisfying the primary needs. The quality

is given to the product only if it can completely and fully fulfil this basic requirement of the consumer (Fabris, 2003). Based on Fabris' examples, the study defines the sustainable supply as the quantity of goods and services that a supplier is willing and ready to offer for sale during a certain period of time and within a certain geographical area by obeying all the consumers' principles and realistic demands, and concerning the ethnic and cultural facets that define the target market, as well as ensuring the food security and safety in accordance with the sustainable development objectives adopted by the regional authorities.

Regarding the sustainability of the aim of this study, namely to identify the typology of the consumers' behaviour towards the food products, the questionnaire was structured in three sections: demographic characteristics of the respondents, the analysis of the food quality elements and their perception by consumers (as a factor for the modification of the consumption policies) and elements for the consumption depending on the regional typology according to the area where the questionnaire was applied (the capital city, Chisinau).

Based on the survey, it was possible to synthesise the consumers' typology in Moldova and evaluate their attitudes regarding the choices of food products according to their quality, options that ultimately influence the decision to purchase.

The research can also be a very useful tool for republics belonging to the former Soviet Union, or for those countries with levels of economic development similar to Moldova, in order to study the behavioural tendencies of consumers regarding the quality of foods from the point of view of the food safety and security policies.

CONCLUSIONS

The sensitivity analysis allowed the use of the conclusions that resulted from the typology of the sustainable supply defined as the quantity of goods and services that a supplier is willing and ready to offer for sale during a certain period of time and within a certain geographical area by following all the consumers' principles and realistic demands, and having in mind the ethnic and cultural facets that define the target market, as well as ensuring the food security and safety in accordance with the sustainable development objectives adopted by the regional authorities. Moreover, the study allowed for building up the framework of the typological impact as a result of applying the results improved due to the inclusion of the elements of the sustainable supply.

Implications for industry

The conclusion of the study is that consumers from Moldova prefer the traditional products and are not willing to try the products from other areas of the EU. That is why the authors believe that these findings may be a real help to the manufacturing and retail businesses in adapting their production and trade based on these preferences. The findings may also be beneficial to small businesses and to companies in order to improve and adjust their production and consumption policies for those countries that are not members of the European Union. The market activity of those retailers that refuse to take into account these preferences can lead to total failure. On the contrary, those businesses that manufacture and sell traditional products could make a profit. The study can also be beneficial for the state itself as it can influence through fiscal measures, the foundation and the development of the businesses manufacturing traditional products which satisfy the demands of the consumers from Moldova.

Implications for research

The consequences of food consumption on the population's health are the subject of numerous studies and discussions both in Europe and worldwide. From this point of view, this study shows that Moldovans are aware of the negative effects of an unhealthy diet and are not interested in imported foods. The researchers may use this study as a reference for their future papers. It can also help students in the research on the typology of the regional consumers. The study is based on an original methodology that can be used in research on large groups. The methodology was described in the study can be used to improve other research methodologies. The limitations of the study refer to the number of individuals, yet the authors strongly believe that when tested on a larger population, the results would be the same. The limitations of the study also refer to the degree of accuracy of the algorithm that was used. This has shown the sensitivity of the consumers behaviour and served for the identification of the factors in this study. In the future, the authors intend to apply the presented model to study consumer behaviour in other former Soviet countries that aspire to become part of the European Union in the future.

In conclusion, consumer trends and the ways in which they manifest themselves for each type of consumer make the producers face an increasingly complex situation in the sense that there is no longer a typical consumer, thus the consumer behaviour is also uniform. On the contrary, producers are currently in a difficult situation dealing with issues of diversity, variability, or the coexistence of multiple consumer criteria, which outline a new type of

consumer that is much more careful and demanding not just for the purchased product but also for the other stages of the consumer process. This can become a threat for the sustainability of the food product range.

The authors believe that the findings could be optimised by applying the optimization model to an alternative group of consumers. This could create the grounds for a comparative analysis of regional consumption typologies. Limiting the model solely to the population of Chisinau, could become a challenge in the future for research on the entire population of Moldova, extended by the analysis of the comparative profiles of the regional consumption typologies through enlarging both the target group and the studied regions.

REFERENCES

Ajzen, I., *Consumer Attitudes and Behaviour*, "Handbook of Consumer Psychology", Vol. 1, pp. 525–548, 2008.

Albu, L. L., *Budgetary Spending and Growth in the EU*, "Journal of Financial and Monetary Economics", Vol. 4, pp. 11–17, 2017.

Ali, M., Villa, K. M., Joshi, J., *Health and Hunger: Nutrient Response to Income Depending on Caloric Availability in Nepal*, "Agricultural Economics", Vol. 49, pp. 611–621, 2018.

Andreyeva, T., Long, M. W., Brownell, K. D., *The Impact of Food Prices on Consumption: A Systematic Review of Research on the Price Elasticity of Demand for Food*, "American Journal of Public Health", Vol. 100, pp. 216–222, 2010.

Antonides, G., *Sustainable Consumer Behaviour: A Collection of Empirical Studies*, "Sustainability", Vol. 9, No. 10, 1686, 2017.

Artene, A. E., Domil, A. E., Ştirbu, D. A., *Environmental Audit and the Certification of an Environment Management System*, "Agricultural Management/Lucrari Stiintifice Seria I, Management Agricol", Vol. 13, pp. 111-116, 2011.

Asgary, N., *Three Essays on Consumer Behavior in the Soviet Union*. Thesis, University of Houston, 1991.

Atwal, G., Williams, A. *Luxury Brand Marketing–the Experience Is Everything*, "Journal of Brand Management", Vol. 16, pp. 338–346, 2009.

Baikova, E. *Comparative Analysis of Methods of Forming Consumers Goods Baskets in Kazakhstan, Russia and Canada*, "Российское предпринимательство", Vol. 22, pp. 96–104, 2013.

Becker-Olsen, K. L., Cudmore, B. A., Hill, R. P., *The Impact of Perceived Corporate Social Responsibility on Consumer Behaviour*, "Journal of Business Research", Vol. 59, pp. 46–53, 2006.

Belletti, G. et al., *I Nuovi Orientamenti del Consumatore e i Riflessi Sulle Imprese Agro-Alimentari* [*The New Consumer Orientations and the Repercussions on Agro-Food Businesses*]. INEA, Osservatorio agro-industriale per la Toscana, Studi Specifici della Ricerca, No. 1, Firenze, 1996.

Bertuccioli, M., *L'identità dei Prodotti Alimentari e la Scienza Sensoriale: Nuove Opportunità per la Produzione e il Marketing dell'impresa*. [*The Identity of Food Products and Sensory Science, New Opportunities for Company Production and Marketing*]. Macerata, 2005. Retrieved from: www.mc.camcom.it/download/313.html (accessed 12 December 2018)

Bostan, I., Năstase, C., Druguş, D., Morariu, A., Bunget, O., *Decrease The Scourge of Malnutrition in Sub-Saharan Africa through the Implementation of EU Financial Instruments*. Advances in Environmental Sciences, Development and Chemistry, Proceedings of the 2014 International Conference on Energy, Environment, Development and Economics, Santorini Island, Greece, July 17-21, pp. 454-459, 2014. Retrieved from: http://inase.org/library/2014/santorini/bypaper/envir/envir-69.pdf

Brach, S., Walsh, G., Shaw, D., *Sustainable Consumption and Third-Party Certification Labels: Consumers' Perceptions and Reactions*, "European Management Journal", Vol. 36 No. 2, pp. 254–265, 2018.

Cappelli, P., Vannucchi, V., *Chimica degli Alimenti: Conservazione e Trasformazioni* [*Food Chemistry: Conservation and Transformation*]. Zanichelli, 2005.

Cazacu, S., *Preference For Domestic Goods: A Study of Consumer Ethnocentrism in the Republic of Moldova*, "Ecoforum Journal", Vol. 5, No. 1, 2016.

Chen, P.C., Yu, M. M., Shih, J. C., Chang, C. C., Hsu, S. H., *A Reassessment of the Global Food Security Index by Using a Hierarchical Data Envelopment Analysis Approach*, "European Journal of Operational Research", Vol. 272, pp. 687–698, 2018.

Chirilov, N., Mihaila, S., *The Role of Research of Economic and Financial Analysis in Contemporary Economy*, Fostering Knowledge Triangle in Moldova: Conference Proceedings, pp. 254–259, 2017.

Commission of the European Communities, Agenda 2000. For a Strong and Wider Union, July 15th, 1997. Retrieved from: http://aei.pitt.edu/3137/1/3137.pdf (accessed on 12 November 2018).

Council of Agricultural Research and Economics, Agriculture and Rural Development, Research for AGRI Committee – Policy Support for Productivity vs. Sustainability in EU Agriculture: Towards Viable Farm in and Green Growth 2017, Retrieved from: http://www.europarl.europa.eu/regdata/etudes/stud/2017/585905/ipol_stu(2017)_en.pdf (accessed on 15 February 2019)

De Pelsmacker, P., Cauberghe, V., Dens, N., *Fear Appeal Effectiveness for Familiar and Unfamiliar Issues*, "Journal of Social Marketing", Vol. 1, pp. 171–191, 2011.

Devin, B., Richards, C., *Food Waste, Power, and Corporate Social Responsibility in the Australian Food Supply Chain*, "Journal of Business Ethics", Vol. 150, pp. 199–210, 2018.

Dimitri, C., Oberholtzer, L., Zive, M., Sandolo, C., *Enhancing Food Security of Low-income Consumers: An Investigation of Financial Incentives for Use at Farmers Markets*, "Food Policy", Vol. 52, pp. 64–70, 2015.

Engel, J. F., Blackwell, R. D., Miniard, P. W., *Consumer behaviour*. Fourth Edition, Holt-Saunders International Editions, 1987.

Engel, E., *Die Productions- und Consumtionsverhältnisse des Königreichs Sachsen* [*The Relations of Production and Consumption in the Kingdom of Saxony*], "Zeitschrift des Statistischen Bureaus des Königlich Sächsischen Ministeriums des Innern", Vol. 8, pp. 1–54, 1857.

Engel, J. F., Kollat, D. T., Blackwell, R. D., *Consumer Behavior*. Holt, Rinehart, and Winston, New York, USA, 1968.

European Commission, The Common Agricultural Policy of the European Union (CAP), 2017. Retrieved from: https://ec.europa.eu/agriculture/consultations/cap-modernising/2017_ro (accessed 12 November 2018).

Fabris, G., *Il nuovo consumatore: verso il postmoderno* [*The New Consumer: Towards the Postmodern*]. Franco Angeli, Milan, Italy, 2003.

Feleagă, L., Feleagă, N., Răileanu, V., *Theoretical considerations about implementation of IAS 41 in Romania*, "Theoretical and Applied Economics", Vol. 2, pp. 31-38, 2012.

Finizia, A., Merciai, S., *La Catena Del valore della Filiera Agroalimentare Tramite la Scomposizione dei Consumi Domestici Delle famiglie* [*The Value Chain of the Agri-food Chain Through the Breakdown of Household Consumption*], "Agriregionieuropa", Vol. 8, No. 30, 2012. Retrieved from: https://agriregionieuropa.univpm.it/it/content/article/31/30/la-catena-del-valore-della-filiera-agroalimentare-tramite-la-scomposizione-dei (accessed 15 February 2019)

Fischer, R., *What's Minimum Wage in European Union 2017*, March 08, 2018. Retrieved from: https://www.reinisfischer.com/whats-minimum-wage-european-union-2017 (accessed 25 April 2019).

Fornari, E., *Il marketing del food service. Le dimensioni competitive nel mercato della ristorazione* [*The marketing of food service. The competitive size in the restaurant market*], EGEA, pp. 41–66, 2006.

Frascarelli, A., *Migliorare il Funzionamento della Filiera Alimentare: una Valutazione degli Strumenti per la Pac Dopo il 2013* [*Improving The Functioning of the Food Supply Chain: An Evaluation of CAP after 2013*], "Rivista di Economia Agroalimentare", Vol. 1, 2012. Retrieved from: https://www.francoangeli.it/riviste/Scheda_Rivista.aspx?IDArticolo=45484&idRivista=87 (accessed on 15 February 2019).

Furdui, V., *The Regulation of the Export of Agricultural Goods in the Moldova: Trends and Present-day Issues*, 2008. Retrieved from: http://www.viitorul.org/files/library/ST_Furdui%2B%2B_012.pdf (accessed on 11 December 2018).

Gagauz, O., Stratan, A., Buciuceanu-Vrabie, M., Penina, O., Ciubotaru, V., Cheianu-Andrei, D., *Population Situation Analysis in the Republic of Moldova*, UN Population Fund, Chisinau, 2016. Retrieved from: https://moldova.unfpa.org/sites/default/files/pub-pdf/PSA_engleza.pdf (accessed 11 February 2019).

Granzin, K. L., Olsen, J. E., Painter, J. J., *Marketing to Consumer Segments Using Health-Promoting Lifestyles*, "Journal of Retailing and Consumer Services", Vol. 5, pp. 131–141, 1998.

Grunert, K. G., Bech-Larsen, T., Bredahl, L., *Three Issues in Consumer Quality Perception and Acceptance of Dairy Products*, "International Dairy Journal", Vol. 10, pp. 575–584, 2000.

Guerrero, L., Guàrdia, M. D., Xicola, J., Verbeke, W., Vanhonacker, F., Zakowska-Biemans, S., Sajdakowska, M., Sulmont-Rosse, C., Issanchou, S., Contel, M., *Consumer-Driven Definition of Traditional Food Products and Innovation in Traditional Foods. A Qualitative Cross-Cultural Study*, "Appetite", Vol. 52, pp. 345–354, 2009.

Harris, B., Burress, D., Mercer, S., Oslund, P., Rose, C., *Kaw Valley Focus Groups on Local and Organic Produce*. University of Kansas, IPPBR Report No. 254B, 2000.

Hing-Ling Lau, A., Lau, H.-S., *The Newsboy Problem with Price-Dependent Demand Distribution*, "Institute of Industrial Engineers Transactions", Vol. 20, pp. 168–175, 1988.

Horská, E., Ürgeová, J., Prokeinová, R., *Consumers' Food Choice and Quality Perception: A Comparative Analysis of Selected Central European Countries*, "Agricultural Economics", Vol. 57, pp. 493-499, 2011.

Hsu, C.-L., Lu, H.-P., *Consumer Behaviour in Online Game Communities: A Motivational Factor Perspective*, "Computers in Human Behavior", Vol. 23, pp. 1642–1659, 2007.

Huddleston, P., Good, L. K., Stoel, L., *Consumer Ethnocentrism, Product Necessity and Quality Perceptions of Russian Consumers. The International Review of Retail*, "Distribution and Consumer Research", Vol. 10, No. 2, pp. 167–181, 2000.

Ionescu, R. V., Zlati, M. L., Antohi, V. M., Stanciu, S., *Reduced Inequalities as Factor of Sustainable Development: The Analysis Under Econometric Models*, "Sustainability", Vol. 10, 3523, 2018.

Islam, T., Zafar Z., A., *Time Series Analysis of Aggregate Consumption Function for Pakistan*, "Argumenta Oeconomica", Vol. 1, No. 38, pp. 243–255, 2017.

Istrate, C., Robu, I. B., Pavaloaia, L., Herghiligiu, I. V., *Analysis of Companies Sustainability Under the Influence of Environmental Information Disclosure*, "Environmental Engineering and Management Journal", Vol. 16, pp. 957–967, 2017.

Kastanakis, M. N., Balabanis, G., *Between the Mass and the Class: Antecedents of the "Bandwagon" Luxury Consumption Behaviour*, "Journal of Business Research", Vol. 65, pp. 1399–1407, 2012.

Kastanakis, M. N., Balabanis, G., *Explaining Variation in Conspicuous Luxury Consumption: An Individual Differences' Perspective*. "Journal of Business Research", Vol. 67, pp. 2147–2154, 2014.

Kindleberger, C.P., *Economic Laws and Economic History*. Cambridge University Press, New York, USA, 1997.

Kostadinova, E., *Sustainable Consumer Behavior: Literature Overview*, "Economic Alternatives", Vol. 2, pp. 224-234, 2016.

Koufaris, M., *Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior,* "Information Systems Research", Vol. 13, pp. 205–223, 2002.

Leonidou, L. C., Katsikeas, C. S., Exploring the Consumer in Former Soviet Republics, "Journal of East-West Business", Vol. 2, No. 3–4, pp. 79–101, 1996.

Leser, C. E. V., *Forms of Engel Functions*, "Econometrica", Vol. 31, pp. 694-703, 1963.

Luedicke, M. K., Thompson, C. J., Giesler, M., *Consumer Identity Work as Moral Protagonism: How Myth and Ideology Animate a Brand-Mediated Moral Conflict*, "Journal of Consumer Research", Vol. 36, pp. 1016–1032, 2009.

Lupan, M., Cozorici, A. N., *Sustainable Economic Growth and Eco-Efficiency*, "The USV Annals of Economics and Public Administration", Vol. 15, No. 1 (21), pp. 63-73, 2015.

Lusk, J. L., McCluskey, J., *Understanding the Impacts of Food Consumer Choice and Food Policy Outcomes*, "Applied Economic Perspectives and Policy", Vol. 40, pp. 5–21, 2018.

Marumo, O., Mabuza, M. L., *Determinants of Urban Consumers' Participation in Informal Vegetable Markets: Evidence from Mahikeng, North West Province, South Africa, and*

Implications for Policy, "South African Journal of Economic and Management Sciences", Vol. 21, pp. 1–9, 2018.

Mateş, D., Bunget, O., Dumitrescu, A, Domil, A, Breban, L. *Contabilitatea finanţărilor europene* [*Accounting for European funding*]. Eikon, Cluj, 2013.

Mihaila, S., *Directions of Improvement and Organisation of Management Accounting Based on ABC-Costing Method Applied in Moldovan Manufacturing Entities*, "European Journal of Accounting, Finance & Business", Vol. 2, No. 2, pp. 75-101, 2014.

Mihaila, S., Jieri, N., *Eficienţa aplicării Standardelor Internaţionale de Raportare Financiară (IFRS) în Republica Moldova, în Condiţiile Actuale ale Economiei De Piaţă* [*Efficiency of the application of International Financial Reporting Standards (IFRS) in the Republic of Moldova, in the Current Conditions of the Market Economy*], "Studia Universitatis Moldaviae-Ştiinţe Exacte şi Economice", No. 7(107), 2018.

Milfont, T. L., Markowitz, E., *Sustainable Consumer Behavior: A Multilevel Perspective*. "Current Opinion in Psychology", Vol. 10, pp. 112–117, 2016.

Mocanu, N., *Managementul Reformărilor în Sectorul Agrar al Republicii Moldova* [*Management of Reforms in the Agrarian Sector of the Republic of Moldova*], 2010. Retrieved from: http://dspace.uasm.md/bitstream/handle/123456789/261/Mocanu.pdf (accessed 15 February 2019)

Mokrejšová, V., Alena, F., Jiří. Z., *Effects of Food Supply Chain Regulation*, "Argumenta Oeconomica", Vol. 41, No. 2, pp. 337–356, 2018.

Morozova, E. A., Glushakova, O. V., Fadeikina, N. V., *Food Consumption as an Indicator of the Quality of Life of the Population in Regions*, "Foods and Raw Materials", Vol. 4, No. 1, pp. 171–180, 2016.

National Bureau of Statistics (NBS), *Moldova in Figures*, Statistical Pocket-Book, 2017. Retrieved from: http://www.statistica.md (accessed on 13 December 2018).

Official Gazette of Moldova, No. 18-26, art No. 6 published on January 19, 2018, *Food Safety Strategy for 2018-2022*. Retrieved from: http://lex.justice.md/md/373834/ (accessed on 12 September 2018).

Oh, M., *Three Essays on Consumer Choices on Food*, Iowa State University. Graduate Theses and Dissertations, 14229, 2014.

Opopol, N., Obreja, G., Ciobanu, A., *Nutrition as Part of Public Health*, Bons Offices Publishing House, Chisinau, 2006.

Orlandini, B., *Consuming 'Good Governance' in Thailand*, "The European Journal of Development Research", Vol. 15, pp. 16–43, 2003.

Ottosson, D. B., Chen, C., Wang, T., Lin, H., *The Sensitivity of On-Street Parking Demand in Response to Price Changes: A Case Study in Seattle*, "WA Transport Policy", Vol. 25, pp. 222–232, 2013.

Pachkovskyy, Y., *Properties of Consumption in Ukraine: from a Household to E-commerce*, "Handel Wewnętrzny", Vol. 4, pp. 230–250, 2014.

Park, C. H., Kim, Y. G., *Identifying Key Factors Affecting Consumer Purchase Behaviour in an Online Shopping Context*, "International Journal of Retail & Distribution Management", Vol. 31, pp. 16–29. 2003.

Petrini, C., *Slow Food: The Case for Taste*. Columbia University Press, New York, USA, 2003.

Pina, J. I., Cetrángolo, H., Amador, A. C., *Strumenti per la Garanzia della Qualità dei Prodotti Agroalimentari* [*Tools for the Quality Assurance of Agri-food Products*], "Agriregionieuropa", Vol. 4, 2008. Retrieved from: https://agriregionieuropa.univpm.it/it/content/article/31/15/strumenti-la-garanzia-della-qualita-dei-prodotti-agroalimentari (accessed on 15 December 2018)

Piron, F., *Consumers' Perceptions of the Country-of-Origin Effect on Purchasing Intentions of (in) Conspicuous Products*, "Journal of Consumer Marketing", Vol. 17, pp. 308–321, 2000.

Pongsakornrungsilp, S., Schroeder, J. E., *Understanding Value Co-Creation in a Co-Consuming Brand Community*, "Marketing Theory", Vol. 11, pp. 303–324, 2011.

Prakash, N., *Stars in Their Eyes: The Dominance of the Celebrity Brand and Intellectual Property Norms Protection through Fan Goodwill*, "Hastings Communications and Entertainment Law Journal", Vol. 35, No. 247, 2013. Retrieved from: https://repository.uchastings.edu/hastings_comm_ent_law_journal/vol35/iss2/1.

Reyes-Menendez, A., Saura, J., Palos-Sanchez, P., Alvarez-Garcia, J., *Understanding User Behavioral Intention to Adopt a Search Engine that Promotes Sustainable Water Management*, "Symmetry", Vol. 10, No. 11, 584, 2018.

Rossiter, J. R., *The C-OAR-SE Procedure for Scale Development in Marketing*, "International Journal of Research in Marketing", Vol. 19, No. 4, pp. 305–335, 2002.

Sandıkcı, Ö., Ekici, A., *Politically Motivated Brand Rejection*, "Journal of Business Research", Vol. 62, pp. 208–217, 2009.

Sexton, R. J., Zhang, M., *An Assessment of the Impact of Food Industry Market Power on US Consumers*, "Agribusiness", Vol. 17, No. 1, pp. 59–79. 2001.

Sharma, R., Jha, M., *Values Influencing Sustainable Consumption Behaviour: Exploring the Contextual Relationship*, "Journal of Business Research", Vol. 76, pp. 77–88, 2017.

Silva, A., Caro, J. C., Magaña-Lemus, D., *Household Food Security: Perceptions, Behavior and Nutritional Quality of Food Purchases*, "Journal of Economic Psychology", Vol. 55, pp. 139–148, 2016.

Smith, A., *An Inquiry into the Nature and Causes of the Wealth of Nations.* Methuen & Co, London 1776.

Splendiani, S., Silvestrelli, P., Rodriguez, M. C., *Il Comportamento del Consumatore Online: Indagine su un Campione di Studenti Italiani* [*Online Consumer Behavior: Survey on a Sample of Italian Students*]. Retrieved from: https://simonesplendiani.com/2016/08/31/il-comportamento-del-consumatore-online-indagine-su-un-campione-di-studenti-italiani/ (accessed on 12 November 2018).

Stihi, L., Zatîc, V., *Analiza Sectorului Agro-Alimentar*. *Studiul sectorial [Analysis of the Agri-Food Sector. Sector study]*, 2016. Retrieved from: http://www.odimm.md/files/ro/pdf/publicatii/Analiza_Industria_agro-alimentar.pdf (accessed on 12 December 2018).

Tcaci, A., Bulgac, E., *The Diagnosis of the Production Capacity of the Agricultural Enterprises,* "Buletinul. Ştiinţific al Universităţii de Stat „Bogdan Petriceicu Hasdeu", Vol. 1, pp. 56–71, 2012.

The Joint Research Center (JRC) of the European Commission's Science and Knowledge Service. Retrieved from: https://ec.europa.eu/info/departments/joint-research-centre_en (accessed 13 December 2018).

The State of Food Security and Nutrition in the World, Safeguarding Against Economic Slowdowns and Downturns, Food and Agriculture Organization of the United Nations Rome, 2019. Retrieved from: https://www.unicef.org/media/55921/file/SOFI-2019-full-report.pdf.

The Treaty of Rome, 1957. Retrieved from: http://www.europarl.europa.eu/about-parliament/ro/in-the-past/the-parliament-and-the-treaties/treaty-of-rome (accessed 12 November 2018).

Thione, L., *La Qualità nel Settore Agro-alimentare. Stato Attuale e Prospettive di Evoluzione* [*The quality in the Agro-food Sector. Current Status and Evolution Prospects*]. Relazione SINCERT, 2005. Retrieved from: https://www.accredia.it/app/uploads/2005/11/201_404RelQAlim1105.pdf (accessed on 12 December 2018).

Toti, E., *Evoluzione del Concetto di Qualità Alimentare* [*Evolution of the Food Quality Concept*], "Rivista Scientifica Dell'Alimentazione", Vol. 45, pp. 47–50, 2016.

Tregear, A., Kuznesof, S., Moxey, A., *Policy Initiatives for Regional Foods: Some Insights from Consumer Research*, "Food Policy", Vol. 23, No. 5, pp. 383–394, 1999.

Tulvinschi, M., *Concepts, News and Perspectives Regarding Accounting in Tourism and Ecotourism*, "Ecoforum Journal", Vol. 4, No. 2, 2015, Retrieved from: http://www.ecoforumjournal.ro/index.php/eco/article/view/208.

Veblen, T., *The Theory of Leisure Class*, 1899, Retrieved from: www.mnc.net/norway/veblen.html.

Venus, T. J., Drabik, D., Wesseler, J., *The Role of a German Multi-stakeholder Standard for Livestock Products Derived from Non-GMO Feed*, "Food Policy", Vol. 78, pp. 58–67, 2018.

Virag, P. N., Mateş, D., Ardelean, D., Feieş, C. G., *Environmental Accounting: A Management Tool for Sustainable Development*, "Studia Universitatis Vasile Goldiş Arad, Seria Ştiinţe Economice", Vol. 24, pp. 164–171, 2014.

Voeller, J. G., Food Safety and Food Security, John Wiley & Sons, Canada, 2014.

Voskanyan, M., David, M., *The Problem of Calculating the Consumer Basket in Armenia*, "21-й век", Vol. 4, pp. 118–140, 2014.

Weber, M., *The Protestant Ethics and the Spirit of Capitalism and Other Writings*. Penguin Books. New York, USA, 2002.

Wilkins, J. L., Bowdish, E., Sobal, J., *Consumer Perceptions of Seasonal and Local Foods: A Study in a U.S. Community,* "Ecology of Food and Nutrition", Vol. 41, No. 4, pp. 415–439, 2002.

Working, H., *Statistical Laws of Family Expenditure*, "Journal of the American Statistical Association", Vol. 38, pp. 43-56, 1943.

Yao, Z., Leung, S. C., Lai, K. K., *Analysis of the Impact of Price-Sensitivity Factors on the Returns Policy in Coordinating Supply Chain*, "European Journal of Operational Research", Vol. 187, No. 1, pp. 275–282, 2008.

Zaghi, A., Bono, P., *La Distribuzione del Valore nella Filiera Agroalimentare Italiana* [*The Distribution of Value in the Italian Agri-Food Chain*], "Agriregionieuropa", Vol. 27, 2011. Retrieved from: https://agriregionieuropa.univpm.it/it/content/article/31/27/la-distribuzione-del-valore-nella-filiera-agroalimentare-italiana (accessed 15 February 2019).

Zlati, M. L., Antohi, V. M., *Accounting Treatments and Policies for Biological Assets from the Perspective of IAS 41 – Agriculture*, "Risk in Contemporary Economy, "Dunarea de Jos" University of Galati, Faculty of Economics and Business Administration" pp. 104–113, 2018a. Retrieved from: https://ideas.repec.org/a/ddj/fserec/y2018p104-113.html (accessed 15 December 2018).

Zlati, M. L., Antohi, V. M., *Analysis of Economic Efficiency Through the Analytical Budgeting Method Using Econometric Modelling*, "Annals of Dunarea de Jos University of Galati Fascicle I. Economics and Applied Informatics", Vol. 1, pp. 72–79, 2018b.

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