The impact of food quality and safety on consumer perception and attitude to food choices in Romania. Opportunities under Green Deal

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Abstract: - Consumer attitude and perception on food quality in general have caused and continue to cause a great deal of controversy, sparking the interest of food researchers and not only in studying the impact of food quality and safety on consumer behaviour. Assessing the level of knowledge on quality nutrition among consumers is of great importance on the metabolic benefits with a primary impact in ensuring and improving health and quality of life. According to EU Green Deal objectives, especially those highlighted in the Farm to Fork action, food quality is a key driver for enhancing organic farming as an important long term goal of the Common Agricultural Policy (CAP). Taking into consideration those realities our paper aims to assess the impact of food quality and safety on consumers' choices in Romania, while underlying progress on the main food-related indicators in Romania. The research methodology is based on a quantitative analysis using the questionnaires on quality of life as a whole for achieving relevant answers for the aspects regarding the perception on food quality in stages. Our main conclusion is showing that in Romania the whole system of achieving food security and safety of food consumption with a certain level of quality must start with food production and distribution system. Thus, it is necessary that this system responds to all the specific demands of food security without omitting the current impact of climate change on agriculture and the adaptation of agriculture to procedures meant to reduce the future impact on the environment. Also the indicators related to food quality in Romania are showing that the higher share of employed population in agriculture per total employed workforce in the context of small farms and subsistence agriculture, means that the goods produced are being largely designed for the self-consumption household, hence EU food quality standards are not always applicable to such products.

Keywords: food quality**,** consumer perception, food safety, consumer behaviour, Romania, CAP, Green Deal, Farm to Fork action
JEL Classification: Q, Q00, Q18

1 Introduction

Food quality is one of the main strategic goals of the reformed CAP, while achieving this objectives must always take into account the Green Deal approach concerning the impact of agriculture on the climate change. The so called "greening" of the Common Agricultural Policy has allowed to the European farmers to focus on developing eco-friendly agricultural products but also on increasing the food quality produced with high environmental, biodiversity and animal welfare standards (Drăgoi, Bâlgăr, 2015).

The impact of organic farming on increasing the food quality in the EU is viewed by many studies as fundamental (Kahl et al., 2012). The Farm to Fork action is also presenting a great importance to enhance food quality especially through some key-actions related to the reduction of the use and risk of pesticides by 50%, and the dedication of 10% of the agricultural area to high-diversity landscapes, hence facilitating alternatives to

chemical pest control as required in organic farming.

While European farmers are increasingly open to the concept of organic farming and its benefits for maximizing their economic success, the consumers are also playing an important role in boosting the food quality all over EU, their choices being fundamental for sustaining the increase of food quality on the internal market. Currently there is a wide consensus in the literature in the field concerning the role of consumers for boosting food quality in EU (Aprile et al., 2012; Zander et al., 2015).

Prompted mainly by environmental concerns and in spite of the higher price of organic products, food quality through organic production is currently supported across EU through an overall system of farm management and food production that aims at sustainable agriculture, high-quality products and the use of processes that do not harm the environment, or human, plant or animal health and welfare. The importance of organic farming as a crucial goal of the greening process of CAP has been highlighted in various research papers (Siderer et al., 2005; Nasir et al., 2014). Presently, while organic farming is a type of farming supported by the CAP and the EU's aquaculture policy it may also help deliver on the Green Deal ambition. Organic farming is important for both environmental protection in the rural areas as for playing an essential part in the transition to sustainable food production and consumption, while increasing the protection of nature and reversing the degradation of ecosystems.

There are studies that are pointing out the important differences existing across the Member States concerning consumers' choices regarding food quality and organic product (Thøgersen, 2010). Such studies are showing that organic food's share of total food consumption depends heavily on political regulation, including legal definitions and standards, financial support to farmers, and a national labeling system, those macro and structural factors being more important for the sustainability of food consumption than are individual-level attitudinal variables.

In Romania like in other EU Member States the impact of food quality on consumer choices is mostly stimulated by behavioral predisposition rather than by organic logo or national policies supporting organic farming. While some studies have underlined the importance of organic logo on stimulating consumer choices (Argyropoulos, 2013), in Romania, consumers' knowledge of the EU organic logo remains low. Currently, organic farming as main driver of increasing food quality needs state subsidies that may be granted as part of CAP regulation.

Taking into consideration all those realities, our paper aims to assess consumers' attitude and preference regarding the diversification of the current range of quality food based on a questionnaire, but also the link between the main agricultural indicators as crop production and farm structure and the food quality of agricultural products in Romania. Our article aims not only to present the current status-quo in the field but also to identify some possible new policy action for increasing food quality in Romania mainly in the light of the new actions included in Green Deal plan (such is the case of the Farm to Fork action).

2 Problem Formulation and Methodology

In order to conduct this study by the questionnaire method, we have resorted to several general and social methods that highlight the perception and attitude of certain socio-professional groups in the context of the analysed subject.

The questionnaire method consisted of a random sample that expressed as accurately as possible the socio-professional structure and the structure of consumers' perception and attitude regarding the quality and the safety of food consumption. Attitudes and food preferences can be defined as behavioural predisposition, known in advance, a result of the inner senses, which shows the favourable or unfavourable path, depending on the subject addressed.

In assessing consumers' attitude and preference regarding the diversification of the current range of quality food based on the questionnaire, we took into account the analysis of the frequency of responses and of the correlation between different types of variables depending on respondents' socio-professional grouping. The questionnaire was designed to provide anticipated-true, usable answers that provide quantifiable data, thus pursuing the objective of the survey. Thus, it is known that the answer to the questions depends essentially on the respondents who belong to a certain socio-professional group.

In this study, we applied our own questionnaire, conceived according to the rules provided by the literature on the information intended to be obtained according to the objectives of the present study. The questionnaire was designed to know respondents' attitude and preference to sustainable foods. The questionnaire, addressed electronically, contained a set of questions of different forms so as to reproduce as accurately as possible the level of consumers' understanding of food quality who should ultimately feel safe and secure from eating a food.

The set of questions referring to the level of understanding food quality on the nutrition label was designed to lead to measurable results on consumers' concerns about the quality of the products they buy and consume. Consumers' perception on the safety of several products throughout the supply chain and the different practices that can reduce the risks posed by food insecurity were also assessed. The role of labels and of different ways of informing about the consumption habits of quality food was also studied.

Our study also relies on the official database provided by the National Institute of Statistics (National Institute of Statistics 2019) at NUTS3/County level. The indicators taken into account are the following: i) Employment in agriculture (share of employees in agriculture of total employees, %); ii) active enterprises in agriculture (total number of active enterprises in agriculture of total active enterprises, %); iii) total crop production (the values of crop production, lei/inh.); iv) total animal production (the values of animal production, lei/inh.). Our research is also based on exploring key f**ood safety related socio-economic indicators such as employment in agriculture, total number of active enterprises in agriculture and total crop and animal production.**

Employment in agriculture is a critical issue for Romania, over 2/3 of the employed population in the rural area are engaged in self-employed activities and/or unpaid work in the household. These categories of rural labour are vulnerable in terms of lacking social and health insurances and struggling at the limits of survival. The rudimentary character of the Romanian agriculture is proved also by the smallest share of wage employment in agriculture (5.2%) (Zamfir and Stănescu 2007). The national average of population employed in primary sector was 20.6% in 2019 in a decreasing trend compared with 2012 when the value was 29.3%. The maximum values are registered in the Teleorman, Călăraşi and Giurgiu Counties (over 40% of employees in agriculture) related to the extended agricultural terrains and potential, where the subsistence agriculture and self-consumption household is dominant (figure 1). In the category between 30 and 40% are included nine counties with a high degree of rural population (Vaslui, Olt, Ialomiţa, Mehedinţi, Vrancea, Suceava, Neamţ, Buzău and Dolj)(Mitrică et al. 2019). Our analysis is showing that 32 counties register higher shares of employment in agriculture than the national average. The lowest values are registered in Bucharest Municipality (0.22%) and Braşov County (9.01%). While in the Bucharest Municipality the low share are explained by the small surface of agriculture land and by the tertiary functions, the Braşov County has a diversified economic profile and is covered of large mountains regions. The higher share of employed population in agriculture per total employed workforce in the context of small farms and subsistence agriculture, means that the agricultural activities in these communes rely increasingly on the traditional household (peasant's or agricultural) and on the contributing family worker, thus the goods produced being largely designed for the self-consumption household (Bălteanu et al 2013, Dumitraşcu et al 2017). The contributing family worker's labour does not involve costs for wages, this accounting for the low prices maintained for agricultural products and for the low level of quality of life in the peasant's households; in fact, in many cases, this status in employment assured only the survival of the farm and its members (assimilated with the poor working category) (Ciutacu and Chivu 2007).

The overview of the county level of the ***total number of active enterprises in agriculture*** could provide a useful correlation to food safety. The values are ranging from a minimum value of 0.37 enterprises/1,000 inh. in the case of Bucharest Municipality to a maximum of 2.78 enterprises/1,000 inh. in Tulcea County. The highest values are registered in Ialomiţa and Călăraşi (over 2.0 enterprises/1,000 inh.) and Brăila, Arad, Teleorman and Giurgiu Counties. These counties are on the one hand specialized in agricultural activities and with diversified economies as in the case of Arad County on the other hand. Half of the counties registered values over the national values (enterprise/1,000 inh.). In the category of low values (between 0.5 and 0.7 enterprises/1,000 inh.) are included seven counties (Iaşi, Dâmboviţa, Gorj, Prahova, Mehedinţi, Vâlcea and Bacău), most of them with a large mountain areas (figure 2).

Figure 1: Share of employees in agricultural sector

Figure 2: Active enterprises in agricultural sector

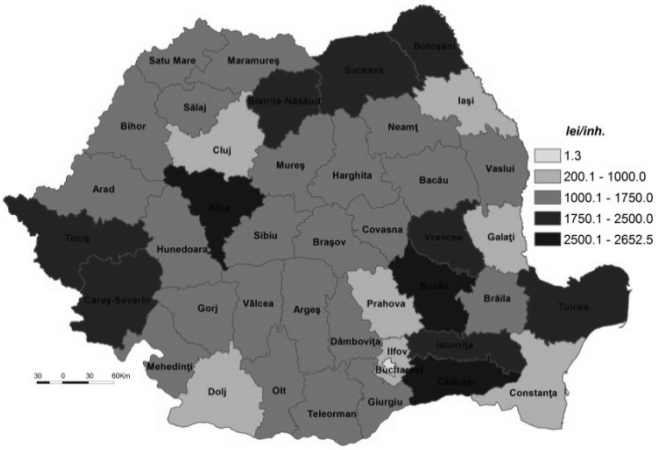
Source: Authors calculations.

The total agricultural production could also reveal the important role played for food safety. The common efforts involved in the complex chain of food production, including agricultural production, processing and transport, and product traceability to consumer would lead to quality and safe items production (Răbonţu 2010).

Total crop production varies between 6.6 lei/inh. in Bucharest Municipality and 8169.4 lei/inh. in Arad County. The counties from the South (Teleorman, Olt, Giurgiu) and South-east of Romania (Brăila, Tulcea and Buzău) have the highest values due to the large arable land, while the Timiş County is characterized by a high productivity of the main crops (Bălteanu et al 2016). The lowest values are registered in the counties with a tertiary or industrial profile (Braşov, Ilfov, Sibiu, Cluj, Hunedoara, Iaşi, Argeş, Prahova) or in whose covered by a large mountain area (Bacău, Maramureş, Harghita, Bistriţa-Năsăud)(figure 3).

Figure 3: Total crop production

Figure 4: Total animal production



Source: Authors calculations.

The total animal production overlapping partially the previous indicator, the minimum values being in Bucharest Municipality (1.3 lei/inh.) and the maximum in Buzău County (2652.5 lei/inh.). The highest values of animal production include counties from the Southern and South-eastern part of Romania (Călăraşi, Ialomiţa, Tulcea, Vrancea) (figure 4). High values have also Alba, Bistriţa-Năsăud, Botoşani, Suceava, Caraş-Severin counties based on sheep and cattle breeding. The low values (less than 1,000 lei/inh.) registered some counties with diversified economic activities (Ilfov, Iaşi, Constanţa, Cluj, Galaţi, Prahova). It is interesting to note that 29 counties have value over the national average (1302 lei/inh.).

3 Results

The results of the socio-professional analysis are necessary in order to obtain conclusive results through the questionnaire method. Thus, respondents were analysed in terms of income, level of education, age and gender. These factors have led to the observation that people of different ages have different attitudes and

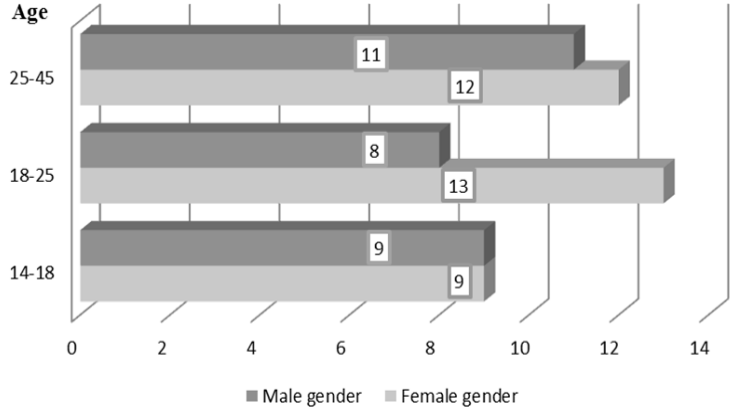
preferences, male respondents have different attitudes and preferences than female respondents regarding food quality.

In terms of respondents' gender, 54.84% were female and 45.16% were male.

In terms of respondents' age, 29.03% were young people aged 14-18 years, 33.87% were respondents aged 18-25 years and 37.09% were respondents aged 25-45 years.

The graphical representation from Figure 5, regarding the structure of the population by age groups and gender, shows that the surveyed sample consisted mainly of female respondents.

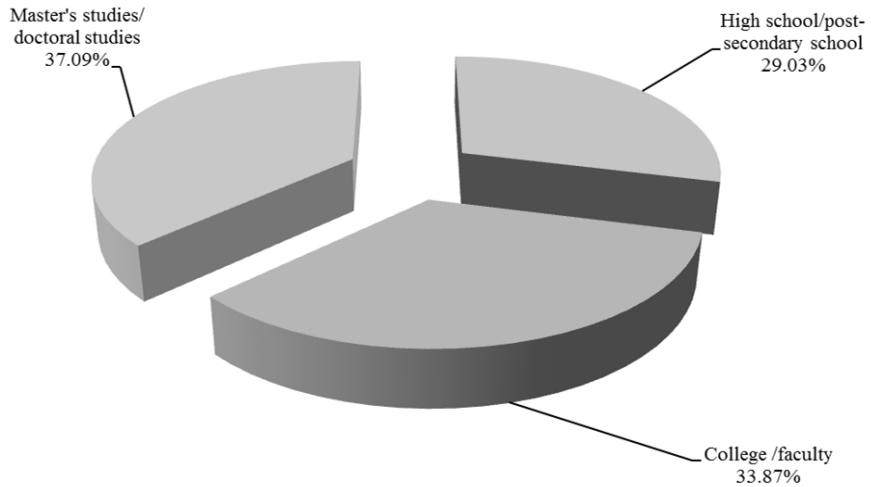
Figure 5: Distribution of respondents by age and gender



Source: Authors calculations.

The distribution of the respondents who participated in the study on the analysis of consumers' perceptions and attitudes to food quality by level of education (Figure 2) is as follows: 29.03% of the respondents had high school/post-secondary studies (pupils in the 11th and 12th grades), 33.87% of the respondents had college /university studies (students) and 37.09% of the respondents had higher education (faculty and/or master's and doctoral studies).

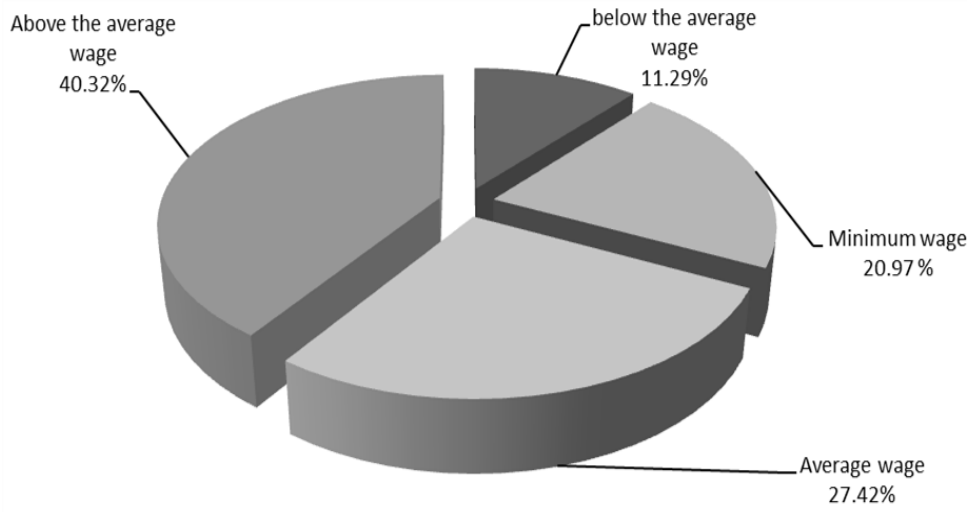
Figure 6: Distribution of respondents by level of education



Source: Authors calculations.

A pertinent analysis of the respondents in the study according to income shows that 11.29% earn below the minimum wage, 20.97% earn the minimum wage, 27.42% earn the average wage and 40.32% earn above the average wage (Figure 7).

Figure 7: Distribution of respondents by income



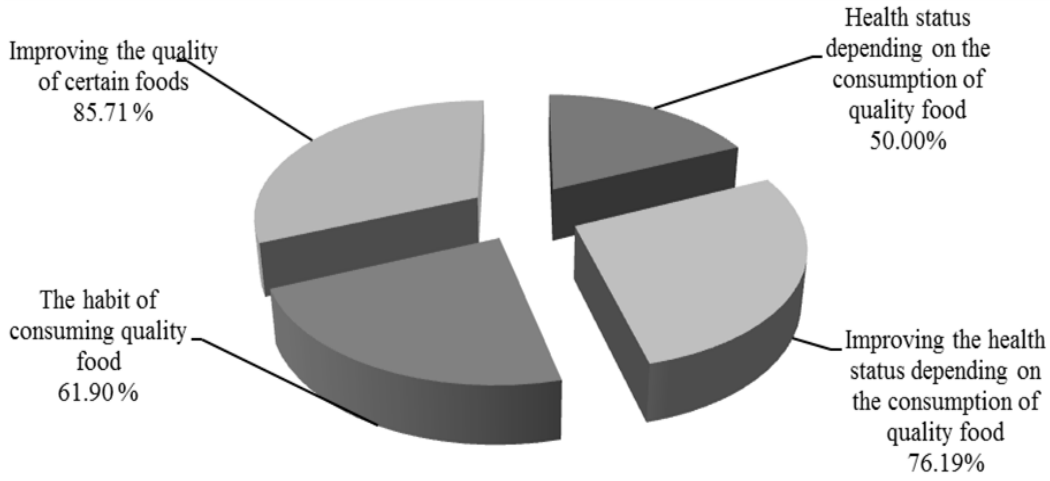
Source: Authors calculations.

According to the survey, the presentation of the empirical results was divided into four parts.

The first part presents consumers' specific attitudes regarding food quality and safety in terms of nutrition, health and food price as well as consumers' confidence in the manufacturing process. Thus, 50% of the respondents consider that their current state of health was largely due to the consumption of quality food purchased on the Romanian market. 76.19% believe that their health could be improved by eating high-quality food.

In terms of quality food consumption, the results of the study show that 61.9% of the respondents frequently consume quality food. 85.71% believe that some products should be withdrawn from the market and/or replaced with products of much improved quality.

Figure 8. Distribution of respondents by consumer preference and attitude to food quality

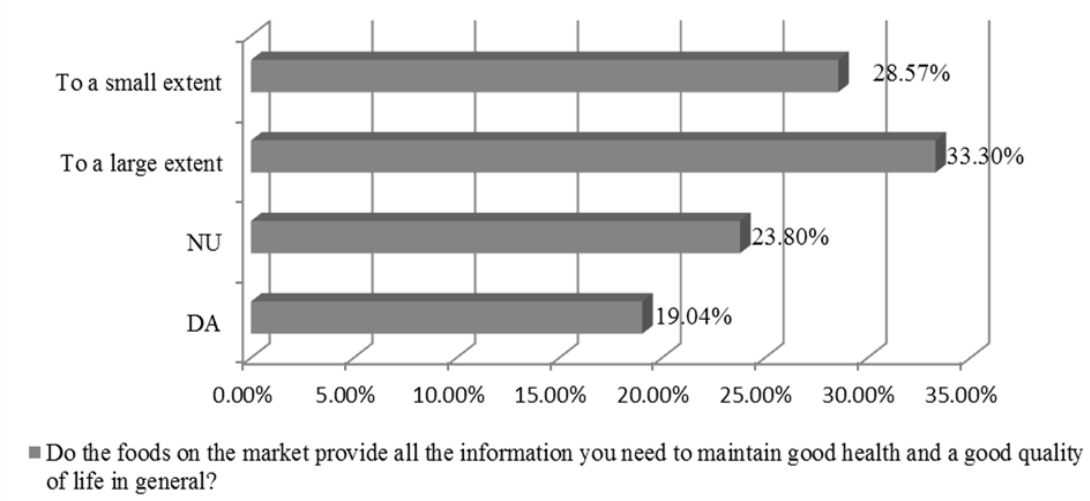


Source: Authors calculations.

Respondents' attitude (Figure 8) regarding the impact that food quality has and/or may have on health status shows a segmentation of the answers correlated both with the price of high-quality products and with the

level of information on the effect of quality food on health.

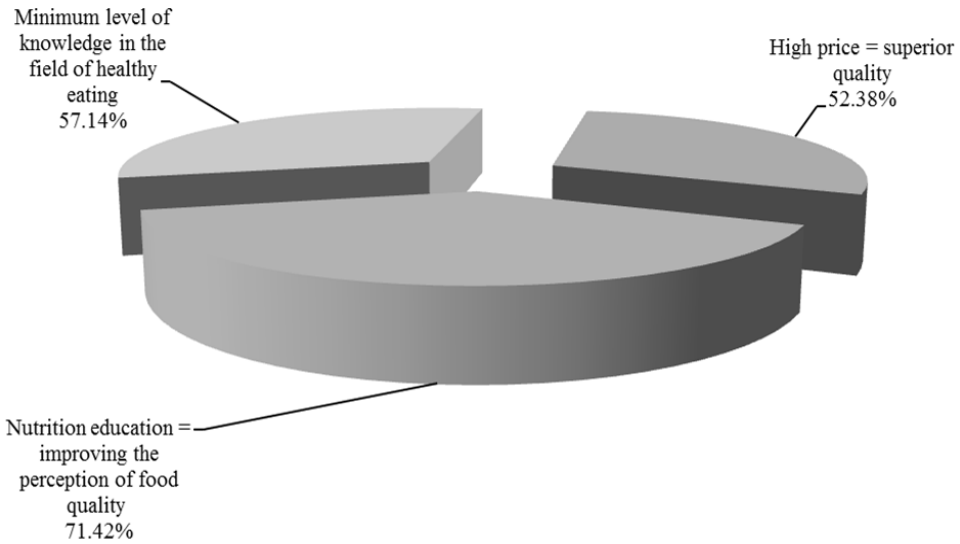
Figure 9: Respondents' attitude to the efficiency of the information necessary to maintain health status



Source: Authors calculations.

Respondents' attitude (Figure 9) to “The food label provides all the information necessary to maintain good health status and a good quality of life in general” divides the answers into the four classes of answers. Thus, at the level of the whole group, 19.04% of the respondents consider that this information is beneficial, 23.80% consider that this information is sometimes incomplete or is presented in a way that is little understood. Regarding the usefulness of food quality information, 33.3% of the respondents believe that it is largely useful and 28.57% believe that food quality information is only beneficial to a small extent for ensuring good health status. An important share of 52.38% of the respondents (Figure 10) consider that the influence of price on food quality and the frequent association of price with higher quality are true. This result is important for the implementation of projects on the significance and impact of healthy, rational, diversified and balanced nutrition on health and quality of life in relation to price. Also, an increased frequency of the taste - price - quality association was observed.

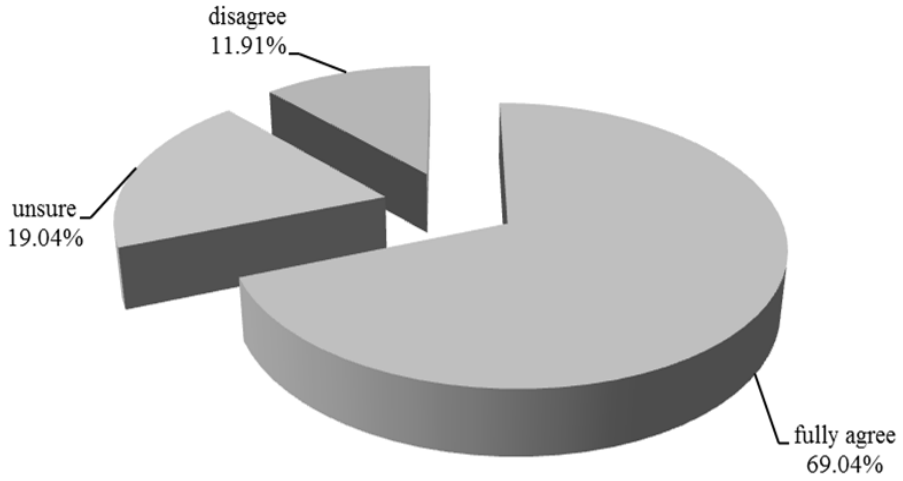
Figure 10: Respondents' perception on the importance of nutrition education on food quality in relation to price



Source: Authors calculations.

Study participants (71.42%) believe that improving the perception of food quality through nutrition education is important in developing healthy eating habits (Figure 10). Respondents believe that nutrition education can be achieved both through scientifically proven remedial courses on healthy eating held in schools by specialists - specialized academic teaching staff and through educational projects implemented by higher education institutions in collaboration with pre-university education institutions. These considerations are based on the fact that 57.14% of the respondents consider that their level of knowledge in the field of healthy eating is minimal which makes them feel insecure in assessing food quality and choose food based, in most cases, on psychosensory properties related to taste and smell and on packaging aesthetics and design.

Figure 11: Respondents' preference for organic food consumption

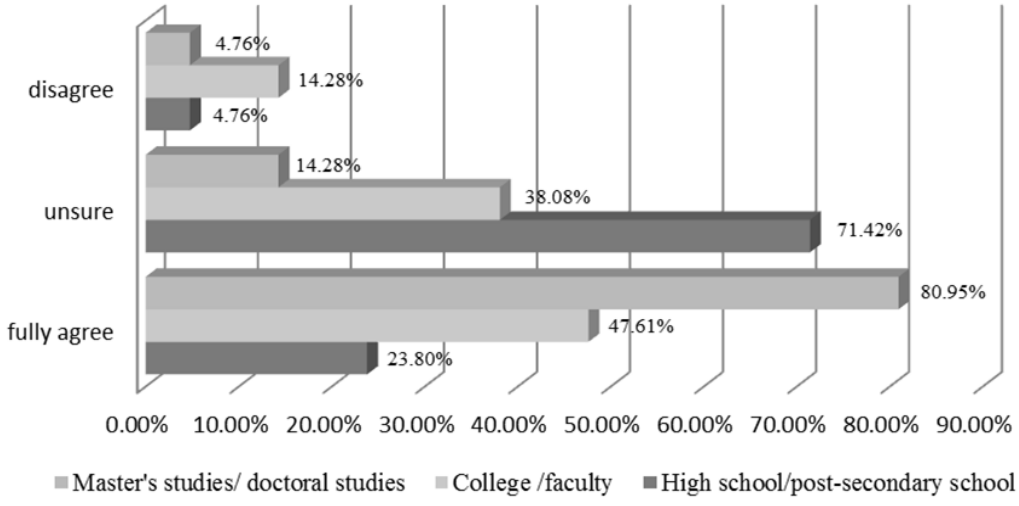


Source: Authors calculations.

Respondents' preference for the consumption of organic food and of high-quality food has led to a classification of the answers at the level of the entire surveyed group as follows: 69.04% agree and fully agree, 19.04% are unsure and 11.91 % consider that organic products do not guarantee that they are healthier for the human body (Figure 11). The positive answers were correlated with the income level, people with average and above average income provided most answers in terms of percentage.

The data obtained at the level of the surveyed sample show respondents' interest and concern for health. Thus, 80.95% of the respondents agreed that food produced using organic technology processes is qualitatively superior to highly processed food (Figure 12).

Figure 12: Personal considerations on organic food quality depending on the level of education



Source: Authors calculations.

The correlation between the answer to the questions “Do you consider that organic products are healthier?”and “I consider that the level of pesticides in vegetables not included in the Bio quality category is

high" shows a certain segmentation of the answers depending on respondents' level of education.

4 Conclusion

In Romania, consumer perceptions on food price indicate a high degree of annoyance on the grounds that most high-quality foods are not always affordable in terms of quality – price. Most consumers argue that food security achieved by marketing quality food at an affordable price is vital, making it possible to adopt a balanced and healthy diet. A qualitatively balanced diet leads to improved health that is considered closely linked to the consumption of high-quality food. Innocuous phrases and messages frequently presented by the media may have an impact on the consumer, leading to greater concerns about food quality even if, in many cases, consumers are not entirely convinced by the food quality. The degree of confidence in food quality shows a downward trend. But the degree of confidence in food quality shows an upward trend in terms of the level of concerns about food choices that ensure a healthy diet and increased food security. Consumers' understanding of the quality and safety of food consumption on the market correlated with the level of education, income and gender highlights the fact that nutrition education is stringent and achievable through educational projects for both pupils in schools and adults.

Consumers' choices could and should do more to contribute to the success of food quality policy in Romania, especially since consumers' attitudes towards organic certification and labelling could be improved through public policies designed to emphasize the trustworthiness of the organic certification and labelling system. The role of such policies in boosting trustworthiness of consumers in organic certification has been underlined by various EU documents and regulations (European Parliament, 2015; European Parliament, 2019).

Our analysis shows that in Romania, the common efforts involved in the complex chain of food production, including agricultural production, processing and transport, and product traceability to consumer would lead to quality and safe items production, but the higher share of employed population in agriculture per total employed workforce in the context of small farms and subsistence agriculture, means that the agricultural activities in these communes rely increasingly on the traditional household and on the contributing family worker, thus the goods produced being largely designed for the self-consumption household and not being distributed to the vast majority of consumers.

Hence, the new funding paradigm of the Farm to Fork strategy could address this imbalance by helping Romanian authorities to stimulate both supply and demand of organic products, while ensuring consumer's trust through promotion activities and green public procurement. Moreover, a series of key actions could allow to Romanian authorities to further support organic agriculture and consumers preferences for high quality products: create a simpler and easier certification system for small farmers while also ensuring tighter precautionary measures and robust checks along the entire supply chain, encouraging, through national RPD plan of the increase of organic farming area in total national production and also simplifying the rules of organic farming according to the Farm to Fork Strategy.

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References:

[1] Aprile, M. C., Caputo, V., & Nayga Jr, R. M. (2012). Consumers' valuation of food quality labels: the case of the European geographic indication and organic farming labels. *International Journal of Consumer Studies*, *36*(2), 158-165.

[2] Argyropoulos, C., Tsiafouli, M. A., Sgardelis, S. P., & Pantis, J. D. (2013). Organic farming without organic products. *Land use policy*, *32*, 324-328.

[3] Bălteanu D., Dragotă C.S., Popovici A., Dumitraşcu M., Kucsicsa G., Grigorescu I. (2013). Land use and crop dynamics related to climate change signals during the post-communist period in the south Oltenia, Romania. Proceedings of the Romanian Academy, seria B, 15:265-278.

[4] Bălteanu, D., Mitrică, B., Mocanu, I., Sima, M. and Popescu, C. (2016). Caracterizarea geografică a regiunilor de dezvoltare. Bălteanu, D., Dumitraşcu, M., Geacu, S., Mitrică, B., Sima, M. (eds.) *Romania. Natură și Societate*, pp. 621-652, București: Editura Academiei Române.

[5] Ciutacu C., Chivu L. (2007). Calitatea muncii şi a ocupării forţei de muncă în România. National Institute of Economic Research, European surveys on working conditions, European Foundation for the Improvement of Living and Working

Conditions http://www.eurofound.europa.eu/sites/default/files/ef_files/pubdocs/2007/37/ro/1/ef0737ro.pdf
[6] Drăgoi, A. - E., Bâlgăr, A. - C. (2015). "Greening" the Common Agricultural Policy: Challenges in the Perspective of 2020, *Knowledge Horizons - Economics*, Faculty of Finance, Banking and Accountancy Bucharest,"Dimitrie Cantemir" Christian University Bucharest, vol. 7(2), pages 57-62, June.
[7] Dumitrașcu M., Mocanu I., Mitrică B., Dragotă C.S., Grigorescu I., Dumitrică C. (2017). The assessment of socio-economic vulnerability to drought in Southern Romania (Oltenia Plain). International Journal of Disaster Risk, http://sciencedirect.com/science/article/pii/S2212420917300961.
[8] European Parliament (2015). *Organic food: Helping EU consumers make an informed choice.* https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2015)557009
[9] European Parliament (2019). *Food Labelling for Consumers – EU Law, Regulation and Policy Options.* https://solidarites-sante.gouv.fr/IMG/pdf/food_labelling_for_consumer_eu.pdf
[10] Kahl, J., Baars, T., Bügel, S., Busscher, N., Huber, M., Kusche, D., Rembiałkowska, E., Schmid, O., Seidel , K., Taupier-Letage , B., Załęcka, A. (2012). Organic food quality: a framework for concept, definition and evaluation from the European perspective. *Journal of the Science of Food and Agriculture*, *92*(14), 2760-2765.
[11] Mitrică B., Persu M.R., Mocanu I., Paul Ș., Grigorescu I., Damian N. (2019). Changes in the Dynamics and Demographic Structure of the Romanian Rural Population: An Overview of the Post-communist Period, in vol. Three Decades of Transformation in the East-Central European Countryside (J. Banski editor), pp. 191-215, Springer, DOI: 10.1007/978-3-030-21237-7_9, https://www.springer.com/gp/book/9783030212360
[12] National Institute of Statistics (2019). TEMPO Online database, http://statistici.insse.ro/shop.
[13] Răbonțu C. (2010). Food safety and its role in the evolution of food trade, Annals of the „Constantin Brâncuși" University of Târgu Jiu, Economy Series, Issue 2, 161-172.
[14] Siderer, Y., Maquet, A., & Anklam, E. (2005). Need for research to support consumer confidence in the growing organic food market. *Trends in Food Science & Technology*, *16*(8), 332-343.
[15] Thøgersen, J. (2010). Country differences in sustainable consumption: The case of organic food. *Journal of Macromarketing*, *30*(2), 171-185.
[16] Zamfir C, Stănescu S (eds) (2007). Enciclopedia dezvoltării sociale, Iași Polirom.
[17] Zander, K., Padel, S., & Zanoli, R. (2015). EU organic logo and its perception by consumers. *British Food Journal*.