

1 Article

2 Organic Food Products Labeling Innovation: the case 3 for Sustainable Food Consumption Behavior

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13

14 **Abstract:** The present context regarding development of the food products trade at European Union
15 level presumes manifestation of some tendencies and challenges meant to claim at the highest level
16 the adaptation capacity of economical agents - both producers and traders. Among these we can
17 take into account their need to comply with organic product labeling standards as an integral part
18 of food products safety policies at Union level. In order to be able to implement a proper label type,
19 not only from the point of view of standards but especially from the perspective given by the
20 consumers perception and motivation toward a healthy sustainable food consumption, producers
21 have to constantly innovate, to find new design solutions for food products labels. This article
22 propose an exploratory research in the form of a field survey that highlights the perceptions of
23 Romanian and Serbian consumers, altogether from the urban environment in relation to organic
24 food labeling and how they influence purchasing decision-making. A random number of 373
25 Serbian consumers' questionnaires, respectively 1262 Romanian consumers' questionnaires have
26 been validated, the results showing interesting results from the point of view of national
27 consumption profile differences due to different cultural, economic and social factors as well as
28 different levels of integration within European economy for the both countries. Main conclusions of
29 the research stress the fact that perceptions regarding organic food products labels are constructed
30 around variables like: type of information to appear within the label, category of information that
31 are missing from labels, degree of producers interest in proper labeling of organic food products,
32 relevance of the information on the organic food labels as regards the decision to purchase the
33 products etc. Conclusions propose some possible developments for innovative future characteristics
34 for organic food products labels.

35 **Keywords:** products labeling; organic food products labeling; labeling innovation; sustainable food
36 consumption; buying decision.

37

38 1. Introduction

39 Modern organizations demand a greater capacity to adapt to business environment
40 requirements. This desideratum entails the permanent investigation of this environment and, in
41 particular, of the tendencies regarding clients' perception.

42 In the food industry, the interaction between products and consumers is constantly under the
43 pressure of immediate consumer motivation, being mediated by the packaging used to present and
44 protect the products.

45 The development of the promotional communication capacity of food producers' organizations
46 becomes essential for preserving competitive advantages and facilitating this interaction. Also, the

47 development of a system of knowledge management at the organizational level is imperative for
48 optimizing the activity [1].

49 In this context, the integration of product-related information and the image of brands enjoys
50 the input brought in by the product labeling process.

51 Food products labeling has been steadily developing over the last 50 years as a result of
52 technological progress and the need for a consistent definition of quality standards in the field.

53 The label, seen as the main constituent element of the packaging, especially for food, is in fact a
54 sum of information defining the product in question, whose essential function is to provide technical
55 details about the producer, the time of production, the technology used, the term expiry date, product
56 class, ingredients used, etc.

57 Labels are currently presented in a multitude of forms, being printed, lithographed, engraved
58 or illustrated, containing product identifiers, adherent to it or joining in one form or another the
59 product.

60 The labeling process is currently very well regulated both at national level and especially at the
61 European market level. In the last instance, labeling supports the exercise of fundamental rights for
62 consumers - the right to be informed before purchasing a product or service, information that needs
63 to be complete, correct and accurate on the essential characteristics of the products in question.

64 The abundance of information passed on labels in the form of abbreviations or the use of
65 technical terms that are often unfamiliar to the general public is a frequent practice that contributes
66 to increasing consumer dissatisfaction in the act of consumption.

67 The current context in which the Romanian market is abounding in a diversity of food products,
68 whose origin is very heterogeneous, requires at both decision-makers and consumers level a stricter
69 approach to the problem of their correct labeling. A civilized trade implies respecting consumer rights
70 and a permanent dialogue between producers, consumers and state institutions.

71 Consumers need constantly to optimize consumption decisions, both quantitatively and
72 qualitatively. Starting from the abundance of products, in order to achieve this goal, an extremely
73 important tool is the correct information based on the product labels. In the case of food products,
74 because of their specificity (a higher degree of perishability, very different product characteristics
75 based on the place of provenance or the manufacturing technology used, etc.), the purchasing
76 decision pressure is also higher than other types of products. This leads to an increased need of
77 information for the consumers, which is have to be accessible precisely when the purchase is made
78 with the help of labels.

79 The present article aims to investigate in the form of an exploratory approach the ways in which
80 the perceptions of the Romanian and Serbian consumers from the urban environment are formed
81 regarding the quality of the organic food products and the content, importance and functions of the
82 labels present on the organic products from the market. In particular, it is worth highlighting the
83 variables describing these perceptions and the relationship with the variables that define the
84 purchasing decisions. The degree of influence of some factors on the others provides the premises for
85 elucidating the mechanism by which the satisfaction in consumption can be optimized, based on a
86 better streamlining of the buying behavior.

87 In this respect, the research done is describing the perceptions of Romanian and Serbian
88 consumers regarding the organic products on the market that are marketed also in other European
89 countries based on the information provided by the labels. Conclusions offer new research horizons
90 aimed to successfully elucidate the process by which consumers can optimize the level of satisfaction
91 as a result of purchasing appropriate food in the context of the evoked current needs set and of the
92 actual lifestyle of individuals.

93 **2. Conceptual Framework of Organic Labeling**

94 Creating a label is, in fact, a complex process by which it is first and foremost to set up a
95 monitoring system that ensures that the real product meets defined criteria [2].

96 The label has become over the past few years not only a marketing tool but a complex concept
97 that enables all actors involved in products trade exchanges to transfer information and join a

98 common reference framework with regard to quality standards the marketed products have to fulfill.
99 Especially in the case of food products, this has become a must, because the offer has being diversified
100 a lot and it has not been controlled rigorously enough from the point of view of quality classes by the
101 competent institutions.

102 A classification of labels is difficult to achieve, one of the few criteria that can be used in this
103 respect is related to the nature of the information it carries. Thus it can be discussed about [3]:

104 - Temporal status (technical marks or experimental marks, classified according to the way of
105 realization and the ability to guarantee the quality of the products. Experimental labels have a lower
106 lifetime, being subject to changes)

107 - Source (labels may come from different sources, so there may be labels produced by
108 independent certification organizations, consumer associations or distributors, as well as classic
109 labels made by manufacturers themselves)

110 - Constraints related to the attribution of the information presented (labels must comply with
111 certain terms of reference, differing from this point of view according to the information elements to
112 which they refer - standards, certain classes of information, etc.)

113 - Credibility (there are brands with different levels of credibility, showing a close correlation
114 between their commercial effectiveness and the degree of credibility they have in relation to
115 consumer perception).

116 Capital linked to a particular label can be defined as the set of consumer associations and
117 behaviors regarding some labeled products that favors strongly and differentiated products that are
118 labeled against unlabeled products [2].

119 Research has highlighted a number of directions in which consumers can be influenced taking
120 into account the capital of a particular label: in terms of perceived quality, from the point of view of
121 uniqueness and from the point of view of confidence and appreciation enjoyed by the manufacturer.

122 3. Issues related to the correct labeling of organic food products

123 Characteristics at the sensory level of food products today are no longer based on natural
124 elements due to the intensive use of food additives in recent years. Thus, many products with flavors,
125 tastes or artificial textures are available on the market and are nutritionally unbalanced, offering a
126 balanced and healthy nutritional profile [4].

127 Consumers - especially young people, are sensitive to the sensory characteristics of food,
128 making the decision to consume a particular product solely on the basis of the taste it possesses.

129 Proper labeling involves providing food information in a complete and coherent manner, if
130 we discuss about its nutritional profile, it is necessary to present the full profile made by competent
131 institutions.

132 The unfair practice of many manufacturers to provide only part of the nutrition information
133 on the packaging by means of some suggestions in the form of claims meant to highlight the product,
134 such as "high iron content", "ensures the daily requirement of vitamin B", etc., is a form of masked
135 consumer manipulation, in fact the complete nutritional profile of the product in question is not
136 balanced and does not provide the full daily needs of an adult in conditions of a healthy eating.

137 In a research regarding the way that U.S. consumers are using food products labels, after a
138 cluster analysis it was shown that eight specific information can be organized in two main categories
139 of label usage: for shopping everyday needs and for specific dietary needs [5].

140 The results are showing more importance given to the nutrition label information in case of
141 dietary needs and among the most active consumers' categories regarding nutrition label information
142 use it may be highlighted women, consumers with higher degree of education, frequent label users,
143 consumers between 50 and 59 years of age and consumers having health issues.

144 Within a qualitative type study conducted by Adrienne Hall-Phillips and Purvi Shah, authors
145 have pointed out that expiration date of food products represent a very important information
146 regarding the purchase decision within stores. From this perspective the study reveals different
147 affective, cognitive and behavioral consequences of the confusion created by various formats
148 regarding expiration dates, like dissatisfaction, cognitive dissonance, decision deferment, negative
149 word of mouth, shopping fatigue and reduced loyalty and trust. [6]

150 In a recent article published in June 2017, L. Malloy-Weir, M. Cooper are showing through an
151 extended scientific literature review that for U.S. consumers empirical relationship between people
152 degree of literacy regarding health and use of nutrition information from products labels is
153 inconsistent and contradictory. Thus, consumers with low levels of health-related literacy are having
154 a different approach in comparison with those having a high degree of literacy when they are making
155 judgments about food products, and from this point of view can benefit from measures directed to
156 improvement of their understanding and usage of nutritional label information. [7]

157 The consumer's perception regarding the importance and content of food product labels is
158 also dependent by the level of formal education attained by individuals, most of studies reflecting
159 that higher levels of general education are determining a supplementary interest over the label issue.

160 The education of adults represents a complex task and its confronting with different problems
161 like: different degree of retention of knowledge, different degree of information and improvement of
162 training during professional life, different receptivity of knowledge that is required to be assimilated,
163 increasing resistance to change etc.

164 From the point of view of the consumers implication in the field of labelling of food products,
165 programs aimed to educate consumers regarding the importance of access to information, the need
166 to preserve the consumers rights, are a must and can offer solutions for a long run.

167

168 **4. Research regarding labeling opinions, influence upon consumer behavior**

169 Consumers are more and more selective when they purchase food products due to the risks
170 and requirements related to health problems.

171 A research made on consumers from Malaysia shows that Food Safety Certificate represent
172 a viable instrument designed to build consumer trust and to optimize the decisional buying process.
173 [8]

174 In the same line, a study realized in Korea having 1019 respondents shows that consumers
175 have a positive attitude toward "front of pack labelling" – the system that is presenting nutritional
176 information about the product using a color code. Consumers are appreciating the information
177 provided, majority of them considering front of pack labelling necessary in order to optimize the
178 daily consumption of nutrients. [9]

179 Another way in which different type of presenting nutritional information is made is the use
180 of so called "traffic light labelling". It consists in using the figurative form of an actual traffic light in
181 order to signal the levels unappropriated for different type of nutritional element like total fat,
182 amount of energy sodium, sugar etc. This type of labelling is used by policy makers and governments
183 as a tool good for public health intervention in order to improve the dietary habits of general
184 population. [10]

185 Consumers will respond at different type of labelling systems according to different factors.
186 Canadian consumers' opinion study regarding the front of pack nutrition rating system has highlight
187 the fact that the classic Canada Nutrition Facts table is perceived as friendly, helpful, credible and
188 purchase decision influential. [11] In the same time Canadian consumers are perceiving positively
189 also the traffic light nutritional system and front of pack system.

190 If we talk about the willingness of the consumers to pay attention and to use nutritional
191 information from the products labels, there has been a lot of research showing a general positive
192 attitude influenced by a wide range of factors like educational background, the context of purchase
193 etc. Thus UK consumers' research conducted by Grunert et al., shows that 27% of respondents have
194 looked on the nutrition information on the label of products. [12]

195 The authors also have been testing the degree of understanding of the consumers regarding
196 the information read. Differences between the level of understanding and the level of usage of the
197 products are explained by objective behavior as usage of food products with high nutritional value
198 is influenced by the interest in healthy eating meanwhile level of understanding of the information
199 from the label is related with the nutritional facts and prior knowledge of the consumer achieved
200 through education.

201 A study referring to 90 respondents from Sri Lanka, has identified the relationship between
202 several types of variables that referred to the reasons why consumers are examining food products
203 labels, the reasons why they do not examine them and the mandatory information required to appear
204 on the labels. [13]

205 The results indicated that about 98% of respondents tend to examine food labels. From these,
206 29% are always examining labels, the main reasons being: checking product compliance for the
207 vegetarian diet, avoiding food-borne illness, religious motivations, verifying the origin of food in
208 terms of typology – organic or not.

209 About 80% of the respondents think that labels exists because they have to indicate the
210 products expiration date, meanwhile 74% have as a principal reason the indication of nutritional
211 composition. About 41% of the respondents think that labels are a legal requirement to be met
212 anyway. Other conclusions are showing that majority of consumers are preoccupied by the nutrients
213 state, the fat content and calories content.

214 A particular information is the fact that 21% of respondents have been influenced regarding
215 the buying decision process by the Monosodium glutamate content. Because, very often the
216 information on the labels was the only information available to consumers at the time of their
217 purchase, respondents were asked to prioritize the information they deem mandatory on the food
218 products labels.

219 Thus, the following categories were noted in order: the name of the food, the expiry date, the
220 list of ingredients, the quantities of certain ingredients, the information on the special conditions of
221 disposal or use, the instructions for use (where applicable), the net quantity, the contact information
222 of the manufacturer or distributor/seller, the origin, the alcohol concentration in the case of beverages.

223 Respondents also suggested improvements to labels such as: Improving the degree of
224 decipherment of information on labels, standardizing the information presented, creating colorful
225 and attractive labels.

226 In another research conducted over Taiwan consumers, authors have revealed that in case of
227 organic products, the presentation of more information with the label help is beneficial, but cannot

228 cause a change of consumers' consumption behavior, who do not have a positive attitude towards
229 this type of products.

230 Given that there is already a positive attitude and a certain degree of confidence in those
231 products, information on labels on how organic products are obtained, processed and handled, the
232 percentage of organic ingredients in a product, determines the increase of consumers' confidence
233 degree related with this kind of products. [14]

234 In the case of the research carried out by Niraj Kumar and Sanjeev Kapoor on a sample of 300
235 young Indian it has been highlighted that consumers have shown considerable importance to the
236 food label and read it carefully before making the final purchase decision for food products. [15]

237 In addition to the price, all other attributes of products that have implications for the health
238 of consumers were considered to be extremely important by the respondents. These information
239 could be classified into two broad categories, namely: product specifications and product quality.
240 The research also has pointed out the fact that the final decision to buy a product based on the label
241 varies greatly depending on gender, age, food habits, and residence.

242 Within a field research involving 400 respondents from Serbia, it have been tested their
243 attitudes regarding the presence of legally required information as well as nutritional or nutritional
244 qualities or health-related information on the labels. There has been tested 889 food products and the
245 results are showing that 38.2% of the studied food products have labels that are not fully
246 understandable to the average consumer. [16] In the same time, about 11% of products have no
247 information referring to the series/product batch identification, and 87.4% of products have only basic
248 nutritional information with only 4.6% of products with nutritional claims. It has also been
249 demonstrated that consumers who regularly engage in sports activities have shown a greater
250 awareness of nutritional information. There were no significant statistical differences between
251 smokers and non-smokers as regards their attitudes towards nutritional information. Age and
252 education also play a significant role in ordering nutrition information. The most important
253 nutritional information is the one related to the content of fat followed by the content of sugar and
254 vitamins.

255 Different studies have been shown that not all the consumers are able to understand fully the
256 entire content that a food label may have within it. More precisely, consumers are having difficulties
257 to correlate the numbers regarding the amount of nutrients with a verbal description. [17]

258 In the same time, the context of purchase can influence the capacity to retain information
259 from the labels. Thereby the capacity of consumers to retain information from nutritional labels and
260 to select useful information can grow overtime, a study made on New York consumers show that the
261 period of time used to gaze at the nutrition labels is increasing if previously the consumers make a
262 learning type effort with nutritional educational materials.

263 In order to explain the influence that labeling can have upon consumers behavior, different
264 authors have been used the Theory of Planned Behavior, considering that the behavior is determined
265 by the intention to engage in a particular behavior, the attitude toward the behavior, the subjective
266 norm and the perceived behavioral control.

267 Thus, in a research made on 795 respondents, the results has been showing that food labeling
268 can explain over 52% of the variance in the purchase behavior of consumers, being possible to
269 correlate the perception upon food labeling with the purchase intention, consumers with high

270 positive and greater reliance on food ingredients having more intentions to purchase food that have
271 the proper information and logo within the label. [17]

272 From the point of view of the importance that nutritional information can play regarding the
273 content of organic food products labels, there are extended studies that are showing that consumers
274 are searching for such information before buying products and are influenced in their decisions in
275 order to consider a particular organic food product healthier or more suited for a diet.

276 Thus, Gonzalez-Roa and Calatrava-Requena are showing in a research made in 2008 that
277 female consumers are referring to nutritional label more frequent than males' consumer, and people
278 between 22 to 54 years of age using more frequently the nutritional label than people having more
279 than 55 years of age. The same study reports also that more educated consumers are using more
280 frequent information from nutritional label than less educated consumers. [18]

281 Another study made by Harbor-Locure et al. in 2001 reports that consumers can be split
282 between label users or non-users, and from this point of view label users are more likely to search
283 information about calories, fat, sodium and cholesterol and give less importance to non-nutritional
284 elements from the labels like price and expiry date. [19]

285 From the point of view of efficiency of nutritional label information, the literature review
286 made by Azaman and Sahak shows that nutrition information presented in front of the package is
287 more effective than back of the package nutritional facts and consumers are preferring to make
288 comparisons only taking account of one nutritional element (eg fat content) instead of many because
289 they can't process the information in real time when they are making their buying decision. [18] The
290 same authors have been synthetized results from previous research regarding the effect of nutritional
291 labels upon the consumer. The results are showing that the nutritional labels do affect the way that
292 consumers are consuming organic food products by changing the perception toward more healthier
293 and nutritive ones.

294 **5. Organic food consumers' behavior**

295 Nowadays food consumption is influenced by a number of different factors like: diversity of
296 food offer, huge number of producers, an important amount of sometimes aggressive promotional
297 programs, well established distribution channels all over the world for the most fresh type food
298 products etc. But the high degree of availability of nutritious food for almost every interested
299 consumer does not automatically lead to a healthy life style, or healthy dietary habits for the mass
300 consumers. [20]

301 A systematic review of various research over time shows that the majority of consumers across
302 countries and in different periods of time consider food naturalness as being a crucial element- a
303 positive food product attribute.

304 However, its relative importance is different from a culture to another, crossing countries and
305 history. The perception related with the concept of naturalness is influenced first by the process of
306 obtaining the food and second by its content. People are considering naturalness an abstract construct
307 linked with healthiness, freshness, and organic or locally produced foods. Because this lack of clarity
308 the concept is hard to measure being subjectively quantified according to the individual
309 interpretations for every person. For this very reason also the term is hard to be regulated and
310 interpreted by producers. [21].

311 Still, the importance of naturalness of food products for consumers can be measured in the form
312 of three different approaches: how the food was grown – the origin of food (consumers are
313 emphasizing the organic characteristics and local farming requirements), the way in which the food
314 is produced and processed (the ingredients used and the type of processing methods), properties of
315 the final food product (seen as properties attributed to healthy food: healthiness, freshness, eco-

316 friendliness, tastiness). Studies have shown that as we stated above, independent of the country and
317 year of study naturalness was considerably important for consumers. Interesting to note is the fact
318 that older, female consumers are giving more importance to food naturalness than younger males.
319 [21].

320 Also, consumers that are sharing as values: idealism, tradition, universalism are more
321 preoccupied by food products naturalness than the ones.

322 Food naturalness importance given by the consumers plays an important role in explaining
323 consumers' willingness/intentions to eat organic food. Also, as a part of consumers' behavior, food
324 naturalness importance is influencing the intention to eat food products friendly for the environment
325 or the negative perception upon new food processing technologies.

326 Several studies point to the high importance of health as a motivator for organic food consumers.
327 [22]

328 The degree of health consciousness manifested by individuals plays an important role in the
329 light of organic food consumption behavior. Thus if a high degree of health consciousness occurs,
330 organic food identity of the consumers manifest itself at a higher level and personal values such as
331 self-transcendence, openness to change, self-enhancement, and conservation are manifesting
332 themselves as well. [22]

333 Social consciousness represents also a variable that can modulate the consumption of organic
334 food. Thus, through organic food consumption, individuals can express their degree of social
335 consciousness, being connected with the concerns regarding their social environment (membership
336 groups and identity groups). As an expression of their behavior, when they are making choices
337 regarding organic food, individuals tend to give more importance to health related motives than to
338 sustainability. Orientation toward health it can be seen as an expression of an egoistic attitude,
339 meanwhile importance granted to sustainability is related with a more altruistic behavior.

340 The personal values of individuals have an important role in mediating the effect. In the same
341 time women tend to develop a more positive organic food identity than males and younger persons
342 more than the older ones.

343 The complex process of analyzing consumer organic food behavior has to take into consideration
344 the fact that organic production guidelines and quality of organic foods being variable across
345 countries.

346 Since organic foods represent something 'new' as compared with conventional foods,
347 consumers with low tolerance for uncertainty/ambiguity may be less inclined to develop a positive
348 organic food identity and to engage in organic food behavior.

349 Studies have accredited the idea that wellbeing is antecedent for organic food consumption,
350 playing the role of a motivational driver. But, in the same time, wellbeing can be a goal and an effect
351 of organic food consumption. The connection between the organic food consumption and wellbeing
352 can be properly explained through certain different theories. Thus cognitive processes and
353 consumers health belief can conduct to the manifestation of this link. Another effect upon organic
354 food consumption is having emotional automatic processes, with the framework of individuals
355 concerns about health. [23]

356 Intention to purchase organic food is moderated by the degree of health conscience. The
357 awareness of consumers moderates positively the intention to purchase organic food. The
358 relationship of the subjective norms, perceived behavior control and environment concern with
359 intention to purchase vary across different contexts. Subjective norm also turned out to be a
360 significant predictor of organic food purchase intention and interaction term of the subjective norms
361 was also significant, which implies that increasing the awareness among consumers will lead towards
362 establishing organic food purchase intention as the social norm. [24]

363 Health conscious consumers are becoming more and more oriented toward organic food in
364 comparison with conventionally grown food. The reasons are related with the high degree of
365 incidence of inappropriate lifestyle type diseases like heart disorders and depression. [25]

366 When brand reputation is low, reasons for consuming organic food partially mediate the
367 relationship between values and attitude. Values are intrinsic related with reasons for or against the

368 consumption of organic food products. When brand reputation is high the reasons for consuming
369 organic food are fully mediating the relationship between values and attitude. [26]

370 Variables that can segment the organic food market at a national level (the Australian one) are
371 age, income, education, metro/city-vs-rural/region, purchase frequency, weekly expenditure,
372 consumption period, retail outlets, perceived values, self-image, and perceptions about organic
373 foods. [27]

374 Personality encompasses a diversified range of traits that can be relevant for the way in which
375 individuals feel, think and behave. Taking account by the fact that this traits are very stable along
376 time for the majority of persons, their specific combination can be edifying for the consumer
377 preferences toward organic food products. Within a study made by Bazzani et al, personalities are
378 evaluated using MIDI (Midlife Development Inventory) scale from the point of view of five specific
379 important traits: openness to experience, conscientiousness, extraversion, agreeableness and
380 neuroticism. The results of the study shows that the measured personality traits have been a source
381 of heterogeneity in terms of consumer's preferences toward locally produced food products, while
382 for organic products a certain amount of homogeneity was manifested. [28]

383 This means that the consumers oriented for organic food products are having stable preferences
384 in general and only in case of the sub sequential category of local products, consumers are behaving
385 differently taking account of their different personality traits.

386 Food products labeled taking account of the sustainability principles regarding the consumption
387 itself and different governmental programs that are emphasizing the importance of green products
388 consumption are important from the point of view of the relationship that can be built between
389 consumers' intentions and concerns about a sustainable consumption and effects upon natural
390 environment. [29]

391 The market for green products can be developed only if a sum of factors are met, among them
392 one of the most important being consumers trust related with this type of products. Studies have
393 shown that the lack of consumers trust can be a strong barrier regarding the development of green
394 products market. More specifically, the low level of knowledge and trust regarding certification,
395 control and labeling of organic food can affect the buying decisions. Mistrust regarding the control
396 system of the food and the authenticity of the products sold as organic are having a significant
397 negative impact on the self-reported buying behavior [30]

398 In terms of consumers perceptions upon organic food products the problem related with the
399 country of origin of the products represents another important element. There has been revealed that,
400 in general country of origin seems to lose from the impact upon consumers when other quality
401 elements are salient for consumers. So, in many situations there is possible that in comparison with
402 conventional food products, organic food products not to be close related with the country of origin
403 issue. [31]

404 Health related benefits are considered the main common justification for organic food products
405 consumption, correlated with local small farms origin of the products. Other studies have revealed
406 that for organic skeptic consumers there are no health advantage that can justify the high price of
407 organic food products. [32]

408 There is an opinion among consumers regarding the way in which organic food products are
409 labeled in general that can be known as "clean label" trend. That is referring to the information that
410 products labels can contain with referral of the presence of certain ingredients, or the using of a
411 certain method of production (considered more or less natural). Consumers are judging in a broad
412 sense through assumptions and inference looking at the front of pack label, and in a strict sense
413 through inspection and inference looking at the back-of-pack label. There are a broad range of factors
414 that are influencing consumers in their choices toward three different categories of food products:
415 organic, natural and "clean" products. Among these factors, health represents a major consumer
416 motive, followed by intrinsic and extrinsic product characteristics. [33]

417 There is a general concern of authorities regarding the promotion of a healthy and
418 environmentally friendly behavior among consumers. From this respect there are four target
419 behaviors considered: reducing overconsumption of food beyond energy needs, reducing

420 consumption of low-nutrient energy dense foods, eating less animal- and more plant-derived foods,
421 and reducing food waste. Studies revealed that health driven behavior is relatively developed among
422 consumers but not the same thing can be assessed related to the attitude regarding the environment.
423 The targeted behaviors were related to the impact on health excepting the wasting of food. In the
424 same time there was low motivation for eating less-animal derived products and plant based food.
425 [34]

426 Individuals can be affected regarding their choices related with health products consumption
427 by temporary career shifting and new work conditions accommodation. [35]

428 In order to change individuals' behavior there should be first a greater emphasis put over the
429 health related motives of consumption and building a constructive attitude over environmental
430 issues secondly.

431 Choices regarding sustainable food products are influenced by different factors that can segment
432 also consumers. From this respect consumers can be classified in four different segments based on
433 their sustainable food behaviors: unsustainers, curtailers, product-oriented consumers and
434 sustainers. There are differences between segments regarding food choice motives, personal and
435 social norms, food involvement and subjective knowledge on sustainable food. Also the ability to
436 judge how a sustainable product has been produced is differentiated among the above characteristics
437 taking account of socio-demographic segmentation. [36]

438 Another important issue is related to the extent in which consumers are perceiving natural or
439 unnatural qualities of food products. A research conducted by Evans et al shows that chemical
440 changes are more important than physical changes, more processing of the products are perceived as
441 less natural by consumers. In the same time e-numbers have been perceived less natural than same
442 preservatives described by different chemical and common names. As a result, products that are
443 physically changed, less processed, containing common known ingredients and that are using
444 common names descriptors for ingredients are perceived being more natural by consumers. [37]

445 Sustainability of food production and consumption is challenged by many factors nowadays
446 like the increase of global population, the consumers developing needs, different changes in
447 consumption models etc. In order to optimize decision regarding agri-food supply chains there can
448 be used different methods, among them the life cycle method and life cycle assessment being
449 preferred. [38]

450 The consumption of health food is influenced from early stages within the development of the
451 individual personality. Hence, within the social group of the family, parents are having the role to
452 influence and promote different food consumption behaviors. Through active guidance/education,
453 restrictive guidance/education, rule-making, availability, accessibility, pressure to eat, rewarding
454 food consumption, rewarding with verbal praise, parents are actively inducing to their children
455 models of behavior. Results are showing that availability and parental modeling effects show the
456 strongest associations with both healthy and unhealthy food consumption. Other parenting practices
457 are more or less efficient depending to the food consumption context and the age of the child, as for
458 the healthy food active guidance can be more effective and for unhealthy food the restrictive guidance
459 and education is more effective. Three main areas of parental influence of child food behavior are in
460 place: active guidance/education, psychosocial mediators and moderating influence of general
461 parenting styles. [39]

462 Latest generations have an educational track that is oriented towards green products
463 consumption behavior and social responsibility. [40]. Due to this, making choices related to organic
464 food product become more relevant as it is integrated in a wider frame.

465 The responsible consumption and food safety are inter-related with sustainability in the field of
466 food industry. A study conducted on 18 wine Romanian companies showed that managers in the
467 field do not place sufficient emphasis on sustainability, this issue remaining just a desideratum for
468 them. Machine to machine technologies are considered a proper solution for food quality standards
469 within the industry and a tool to enhance the sustainability of production but the majority of
470 managers are believing that the implementation of these strategies is the prestige of the strong ones,
471 for the other producers generating too high costs, which lead to reduction of competitiveness on the

472 domestic and export markets. In the context of the research it was also clear that the food safety
473 through wine consumption does not strictly refer to the maintenance of physical health of the people,
474 the main motivation of wine consumption should not to be alcohol content as in the case with the
475 consumption of poor quality or counterfeit wines, but a series of aspects related to education, culture,
476 civilization, traditions, life style etc. [41]

477 As a general conclusion, the efforts made by the different categories of actors within the field of
478 organic food production and retail are oriented toward a sustainable model of production and
479 consumption. From this point of view retailers of organic food products have a crucial role in
480 educating consumers and offer them in the same time wide range of alternatives to choose regarding
481 a healthy, sustainable consumption model. [42]

482

483 6. Materials and Methods

484 In order to measure the perceptions of consumers regarding the importance of food products
485 labeling we have developed an online survey type research.

486 The research has been addressed to consumers both from Romania and Serbia, the main goal of
487 the research being determining the perceptions of urban consumers in relation to food labeling and
488 their influence at the level of purchasing decision process.

489 The final validated number of questionnaires was 1262 for the Romanian consumers and 373 for
490 Serbian consumers.

491 As objectives of the research we can highlight: identification of information sources used by
492 consumers regarding labeling issue, determining the type of information that food consumers are
493 interested in appearing on the products label, determining the degree of satisfaction associated with
494 the content of the food products labels, determining the categories of information to be added to the
495 labels, determining the extent to which the purchase decision is influenced by the product label,
496 determining the extent to which consumers are aware of the labeling legislation, identifying
497 consumers' opinions in relation to the degree of protection afforded by Romanian respectively
498 Serbian legislation regarding labels, determining consumers' perception of the correct labeling of
499 food products by Romanian respectively Serbian producers, determining consumers' perception of
500 the correct labeling of food by foreign producers, identifying consumers' views of how food labels
501 have respected the accuracy of the information provided in relation to the actual characteristics of the
502 labeled products, determining the degree of importance of the label for the information search stage
503 within the purchasing decision process, determining the degree of influence of the labels on the
504 choice of the product to be consumed at the place of purchase, identify the degree to which the label
505 can determine consumer loyalty, determining the categories of information that are turning into
506 barriers regarding the final purchase decision making.

507 Corresponding to the objectives, we can state the following hypothesis to be verified:

508 Hypothesis H1. From the perspective of the interest shown for food products labeling, women
509 generally denote a higher of interest than men.

510 Hypothesis H.2. Most consumers are informing themselves from institutional websites and
511 social networks

512 Hypothesis H 3. Consumers are preferring information on ingredients

513 Hypothesis H.4. Respondents believe to a large extent that the food labels that can be found on
514 the Romanian respectively Serbian market need to be modified

515 Hypothesis H.5. The vast majority of respondents find that data on restrictions or
516 contraindications in consumption for certain categories of consumers are missing from the food
517 products labels

518 Hypothesis H.6. Food labels provide the information needed to make the purchasing decision
519 to a large extent.

520 Hypothesis H.7. The vast majority of respondents have little information about labeling
521 legislation

522 Hypothesis H.8. Most respondents believe that legislation regulating labeling fails to protect the
523 interests of Romanian respectively Serbian consumers

524 Hypothesis H.9. Respondents consider to a large extent that Romanian respectively Serbian
525 producers are involved in the proper labeling of food products

526 Hypothesis H.10. Many respondents consider that the product label is very important when they
527 are looking for the necessary information regarding their purchase decision

528 Hypothesis H.11. Respondents consider to a large extent that the satisfaction of their own needs
529 in terms of food labeling leads to further acquisitions for the products in question

530 7. Results

531 The analysis for the research results is made separately for the two samples, with subsequent
532 comparisons being made between them.

533 As regarding the first question, which has also the role of a filter type question, the percentage
534 of respondents interested in the issue of labeling indicates its importance and the degree of maturity
535 of the consumer in the urban environment. Also exists a correlation between the respondents' sex
536 and the interest shown regarding labeling issue. Women, both for Romanians and Serbs, are more
537 interested than men in this issue.

538 In the case of Romanian consumers, 64% of the respondents are women who answered
539 positively showing their interest related to labelling of food products. The same, in the case of Serbian
540 consumers, 57% of respondents are women. 93% of Romanian women said yes and 87% of Serbian
541 women are also interested.

542 Since the measurement of the variables related to the interest for the labeling problem and the
543 gender of the respondents was made using the nominal scales, in order to identify the existence of
544 the correlation, the Chi square test was completed, supplemented with the analysis of the coefficient
545 of contiguity.

546 As can be seen in the tables below, this association (correlation) exists but it is not very strong
547 for respondents both in Romania and Serbia.

548 For Romanian consumers, the contiguity coefficient is equal to 0.317 and approximate
549 significance has the value =0.000. In the case of Serbian consumers the contiguity coefficient is equal
550 to 0.280 and approximate significance has the same value =0.000.

551

552 Table 1. Chi Square and contiguity coefficient values for Romanian consumers, correlation
553 between gender of respondents and interest shown to labelling issue

Chi-Square Tests					
	Value	df	Asymptotic Significance (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	140.599 ^a	1	0.000		
Continuity Correction ^b	138.382	1	0.000		
Likelihood Ratio	129.411	1	0.000		
Fisher's Exact Test				0.000	0.000
Linear-by-Linear Association	140.487	1	0.000		
N of Valid Cases	1262				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 46.83.					
b. Computed only for a 2x2 table					
Symmetric Measures					

		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	0.317	0.000
N of Valid Cases		1262	

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Table 2. Chi Square and contiguity coefficient values for Serbian consumers, correlation between gender of respondents and interest shown to labelling issue

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	31.697 ^a	1	.000		
Continuity Correction ^b	30.482	1	.000		
Likelihood Ratio	32.961	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	31.612	1	.000		
N of Valid Cases	373				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 57.84.					
b. Computed only for a 2x2 table					
Symmetric Measures			Value	Approximate Significance	
Nominal by Nominal	Contingency Coefficient		.280	.000	
N of Valid Cases			373		

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It can be seen that the hypothesis H1 is partially validated, because there are differences between women and men in terms of interest, but this difference is not significant.

As regarding the sources of information used by the respondents related with food products labelling issue, it has been advanced the hypothesis according to which most consumers are informing on the websites of the institutions in the field and from the social networks.

In order to validate this hypothesis it has been taken into consideration a number of 1152 questionnaires corresponding to Romanian consumers that declare interested by the issue of food products labelling and 352 questionnaires corresponding to Serbian consumers.

Within the table below it can be highlighted the received answers repartition:

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Tabel 3. Sources of information concerning the food products labelling issue

Evaluated attribute	Number of Romanian respondents	Romanian total from the ones that have been answered yes at the first question from questionnaire	Number of Serbian respondents	Serbian total from the ones that have been answered yes at the first question from questionnaire
websites of institutions and / or organizations in the field (ANPC, European Commission etc)	585	50.8%	128	36.4%
Magazines and specialized publications (Market Magazine, Retail FMCG etc.)	226	19.6%	264	75%
Family, friends, colleagues	440	38.2%	-	-
Participate in events in the field (workshops, seminars, conferences, courses etc.)	64	5.6%	328	93,2%
information materials made available by the local government administration	147	12.8%	288	81.8%
social networking sites, blogs specializing in the field	568	49.3%	192	54.5%

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From the synthesized table above, we can highlight in case of Romanian consumers that the most used source of information is represented by websites of institutions and / or organizations in the field (ANPC, European Commission etc.), followed by social networks websites and field specialized blogs, family, friends and colleagues, journals and specialized magazines, respectively information materials made available by the local government administration. Events participation is the least used possible source of information for Romanian consumers.

As regarding Serbian consumers, the most important source of information is represented by the participation to events in the field (workshops, seminars, conferences, courses, etc.), followed by information materials made available by the local government administration, and journals and specialized magazines. Next we can see social networks, specialized blogs and at the last place websites of institutions or organizations activating in the field.

Another conclusion that can be drawn regarding the possible correlation between sources of information regarding food products labelling and descriptive variable referring to sex of the respondents points out that in both countries male respondents prefer more than women sources like institutions or organizations websites, journals and specialized magazines. In the same time from the perspective of the same type of correlation women tend to prefer more than man: participation to

589 events, informative materials given by local administration, social networks, blogs specialized in the
590 field.

591 As regarding the validation of hypothesis no3, it can be noted the results synthesized within
592 the following table.

593 Table 4. Type of information which are of interest for the consumer in order to appear on food
594 products labels

The type of information that food products consumers are interested in appearing on the products label	Number of Romanian respondents	weight	Number of Serbian respondents	weight
the name of the food product	852	74%	152	43.2%
the list of ingredients	1023	88.8%	104	29.5%
substances which cause allergies or intolerance (peanuts, milk, mustard, fish, gluten-containing cereals etc.)	998	86.6%	144	40.9%
the quantity of certain ingredients or ingredients' categories	808	70.1%	192	54.5%
the net quantity of the food product	720	62.5%	216	61.4%
the date of minimum durability or the final consumption date	972	84.4%	152	43.2%
special storage conditions and / or conditions of use	885	76.8%	176	50%
the name or business name and address of the operator or importer;	820	71.2%	248	70.4%
country of origin or place of provenance	911	79.1%	144	40.9%
instructions for use	720	62.5%	200	56.8%
a nutritional statement	666	57.8%	192	54.5%

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596 Analyzing the responses of Romanian consumers, results that the most preferred are:
597 information referring to the list of ingredients, followed by the substances which cause allergies or
598 intolerance, the date of minimum durability or the final consumption date, country of origin or place
599 of provenance, special storage conditions and / or conditions of use, the name of the food product,
600 the name or business name and address of the operator or importer, the quantity of certain
601 ingredients or ingredients' categories, the net quantity of the food product, instructions for use and
602 a nutritional statement.

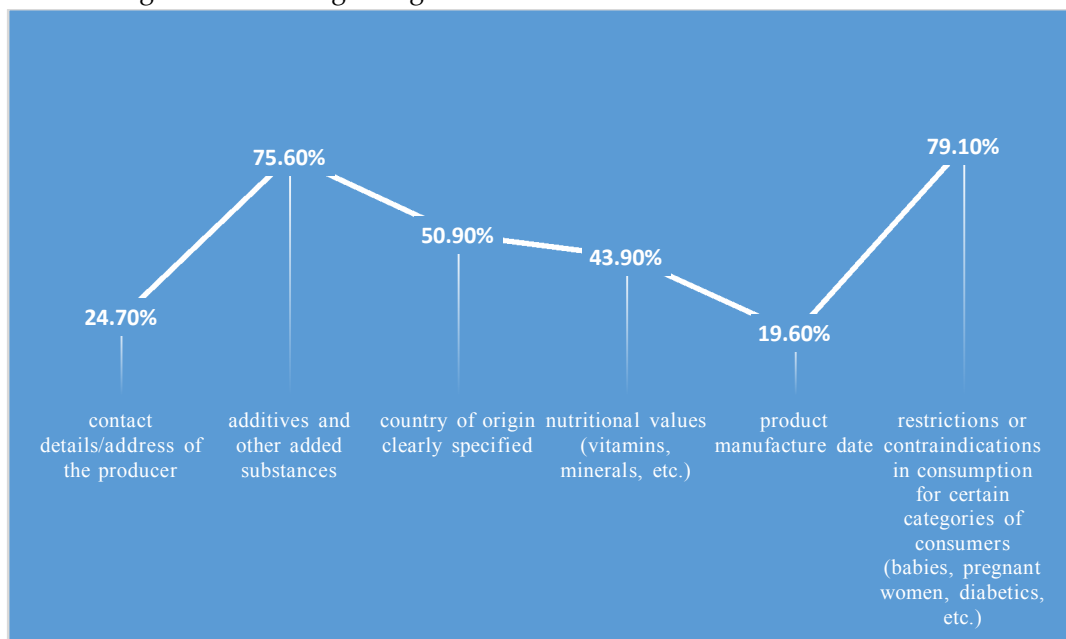
603 For the Serbian consumers, the order of preference for the categories of information that should
604 appear on food products labels is referring to: the name or business name and address of the
605 operator or importer, the net quantity of the food product, instructions for use, the quantity of certain
606 ingredients or ingredients' categories, nutritional statement, special storage conditions and / or
607 conditions of use, the date of minimum durability or the final consumption date, the name of the food
608 product, substances which cause allergies or intolerance and information referring to the list of
609 ingredients.

610 Thus, hypothesis no3 regarding the fact that information about ingredients represent the
 611 category of information that has been preferred by the consumers was validated only in case of the
 612 Romanian consumers, the Serbians being sensible to other categories like the name or business name
 613 and address of the operator or importer.

614 Hypothesis no 4, was advancing the idea that consumers from the Romanian and Serbian
 615 market altogether consider that labels of food products marketed have to be modified in a great
 616 extent.

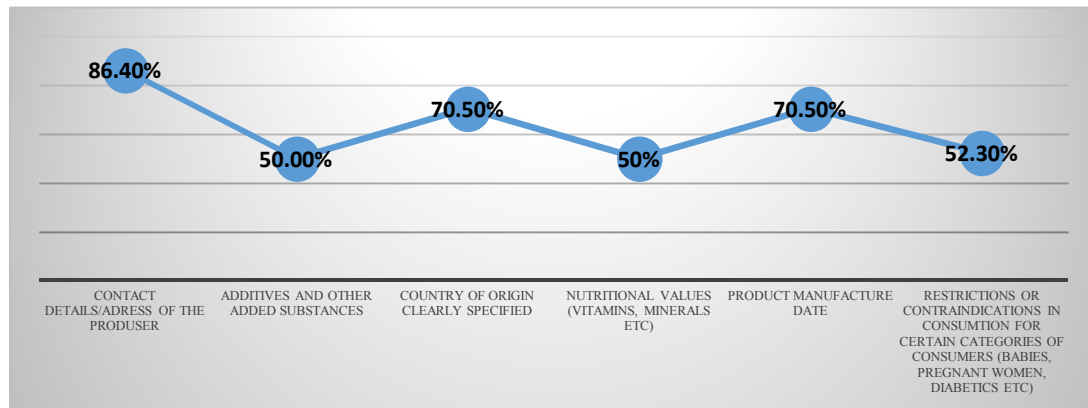
617 Responses analysis reveals the validation of this hypothesis because the average score obtained
 618 from the measurement using the semantic differential scale is 4, which indicates that the respondents
 619 believe that the food labels on the Romanian market should be largely modified. The average score
 620 for Serbia is 3,681, which indicates that respondents believe that the food labels on the Serbian market
 621 should also have to be modified.

622 As regarding the H5 hypothesis, the analysis of the results revealed its validation. Thus, in the
 623 case of the Romanian respondents, the majority of respondents (79.1%) consider that the information
 624 on restrictions or contraindications in consumption for certain categories of consumers (babies,
 625 pregnant women, diabetics, etc.) is missing from the labels, followed by 75.6% that it considers that
 626 there are missing information regarding additives and other added substances.



627
 628 Figure 1. Proportion of consumers regarding opinions about categories of information that are
 629 missing from the actual food products labels in case of Romanian consumers
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631 In the case of respondents in Serbia, most of them (86.40%), consider that information about:
 632 contact details / address of the producer is missing, followed by (70.50%) that considers country of
 633 origin should be clearly specified and (70.50%) that are considering product manufacturing date is
 634 the information that is missing.



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Fig. 2. Proportion of consumers regarding opinions about categories of information that are missing from the actual food products labels in case of Serbian consumers

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The H6 hypothesis regarding the extent to which the food labels provide the information needed to make the purchase decision was not validated because the average score obtained for this variable measured by the 5 steps semantic differential scale was 2.889 for the Romanian consumers and 2.886 in the case of Serbian consumers.

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Thus, food labels offer only partial information needed for the buying decision in the opinion of both Romanian and Serbian consumers.

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Analysis of the data obtained also indicates that there are no gender differences regarding the extent to which the labels provide sufficient information in order for the purchasing decision to be possible. Most women (34%) and men (31%) in Romania chose the response - to a small extent. While the majority of respondents in Serbia, regardless of sex, have chosen the middle of the scale variant - nor-nor.

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The H7 hypothesis was validated because the average score of 2.779 for the Romanian respondents and 2.659 for the Serbian respondents regarding the responses corresponding to their opinion about the labeling legislation indicates that the respondents are not aware of the legislation in question.

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In case of the Romanian consumers the value of Pearson Chi-Square is 241.964 with a Asymptotic Significance of 0.000, while the values for Serbian consumers are showing Pearson Chi-Square being 12.325 with the same value for Asymptotic Significance of 0.000.

Table 5. Chi Square and contiguity coefficient values for Romanian consumers, correlation between gender of respondents and opinion about the labeling legislation

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	241.964 ^a	4	.000
Likelihood Ratio	246.818	4	.000
Linear-by-Linear Association	140.358	1	.000
N of Valid Cases	1152		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 35.24.

Symmetric Measures

	Value	Approximate Significance
Nominal by Nominal Contingency Coefficient	.417	.000
N of Valid Cases	1152	

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This means that men are considering themselves much more informed than women as regarding labelling legislation.

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In order to validate the H8 hypothesis, an average score of 2.549 was calculated, indicating that Romanian consumers believe that the legislation currently governing food labeling in the country protects to a small extent the interests of Romanian consumers. The average score for respondents in Serbia of 2,795 points to the same explanation.

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Regarding the perception that the legislation regulating the labeling currently protects the interests of the Romanian consumers it can be seen that it differs by gender. Thus, women are more skeptical than men in terms of protection offered by current legislation.

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For the Romanian consumers Pearson Chi-Square has value 126.859, with Asymptotic Significance (2-sided) = 0.000 and Contingency Coefficient = 0.315, while for the Serbian consumers Pearson Chi-Square has value 62.672, with Asymptotic Significance (2-sided) = 0.000 and Contingency Coefficient = 0.389.

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The H9 hypothesis is not validated because the average score obtained is 2.584 for the Romanian consumers and 2.841 for the Serbian consumers, indicating that the respondents believe that the Romanian food producers are making minimal efforts regarding the proper labeling of their own products, the same situation being characteristic for Serbian food producers as well.

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If we try to emphasize the correlation between sex variable and the opinion regarding the degree of producers' involvement in having a proper food products labeling, we can highlight the fact that men are having a greater confidence than women regarding the labeling made by national producers.

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In case of Romanian consumers Pearson Chi-Square has value 185.433, with Asymptotic Significance (2-sided) = 0.000 and Contingency Coefficient = 0.372, while for the Serbian consumers Pearson Chi-Square has value 102.560, with Asymptotic Significance (2-sided) = 0.000 and Contingency Coefficient = 0.475.

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In the case of H10 hypothesis regarding the importance that products labels can have within the process of searching the necessary information to the purchase decision, the average score obtained is 4,584 for the Romanian consumers (using 5 steps differential semantic scale).

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This indicates that the importance given to the food label is very high in relation to the consumer's effort to identify the information needed to make the purchasing decision. The average score of 3.273 obtained in the case of Serbian consumers indicates that they are not given any importance to the label in order to make the purchase decision.

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As regarding the validation of hypothesis no11, referring to the extent to which consumers are making repeated purchases for food products those labels are satisfying their informational needs, it can be observed that the hypothesis can be validated for the Romanian consumers as it was obtained an average score of 4,119 for the differential semantic scale type responses.

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Thus it can be point out that Romanian consumers are willing to become loyal to product brands that are convincing from the point of view of information offered with the help of their labels.

In case of the Serbian consumers, the average score of 3,045 shows that the respondents are indifferent when it comes to become loyal to some brands according to their labels.

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703 8. Discussion and Conclusions

704 Taking account of the results of the analysis, and the number of hypothesis that have been
705 validated, the research has shown certain features of the Romanian and Serbian consumers regarding
706 the perception upon labeling issue, importance of different type of information within the process of
707 interacting with the products, attitude regarding labelling legislation and importance of nutritional
708 information regarding the buying decisional process.

709 The results has shown that there are differences between women and men regarding the interest
710 shown for labelling, women being more interested in general than men. Although the differences are
711 not statistically representative, it can be explained by the fact that women generally are dealing with
712 food products purchasing at the level of functional families with children on one hand and can be
713 more than men preoccupied by the healthy food on the other hand.

714 From the point of view of sources of information regarding the labeling issue there are significant
715 differences between the two samples of consumers. In case of Romanian consumers there are
716 preferred the websites of institutions or organizations in the field (including European Commission
717 website), social networks websites and specialized blogs, meanwhile Serbian consumers have the
718 participation to events, information materials from local government administration and journals
719 and specialized magazines. Differences are objective because the fact that in Serbian economy,
720 institutions or organizations that are able to regulate this particular issue are not well represented
721 while Romania have different official government and non-government type organizations that are
722 having as a main object of activity labeling of products in general.

723 The correlation between sex of the respondents and sources of information used regarding
724 labelling are showing that in both countries men are using more websites of institutions and
725 organizations, journals and magazines, while women are using participation to events, informative
726 materials, social networks and blogs. Differences are explained by the way in which women are more
727 oriented generally toward sources of information which suppose interaction and a higher degree of
728 confidence given by others opinion.

729 Categories of information from the labels that are important to consumers are different for the
730 two samples of consumers. Romanian consumers are interested more about information on list of
731 ingredients, allergenic substances, the date of durability. Serbian consumers are interested more on
732 information regarding the name or business name of the producer or distributor, net quantity of food
733 product, instructions for use. This results are very suggestive for the specific consumption culture
734 features for every nation.

735 Both type of consumers are considering that food product labels that can be actually found
736 within the market need to be modified. As regarding the categories of information that consumers
737 consider that have to be added, in case of Romanian consumers, information on restrictions or
738 contraindications in consumption for certain categories of consumers and information regarding
739 additives and other added substances are the categories considered. In case of Serbian consumers we
740 can highlight information about: contact details / address of the producer, country of origin and
741 product manufacturing date.

742 Again this conclusion shows differences related to the consumption culture and the structure of
743 the relationship between economic agents in the two countries.

744 As regarding the degree in which food producers are implying themselves in the proper labeling
745 of their own products, both type of consumers share the opinion according to the degree of
746 involvement is minimal for the producers.

747 The issue of labelling is a very complex one, and its importance is given by the fact that the
748 buying decisional process in case of specific categories of products like food type products can be
749 influenced in a great extent by the nutritional information available within the labels.

750 Differences between different countries, even if they are somehow related geographically and
751 culturally are still present because the different ways in which these economies have been developing
752 themselves over time.

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754 the project, Dragan Ilic, Mihai Andronie, Uta Cristian organized and supervised data collection, Gardan Iuliana

755 Petronela performed data analysis and wrote the manuscript. All authors read and improved the
756 manuscript.

757 **Conflicts of Interest:** The authors declare no conflict of interest.

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