

COMPARATIVE STUDY ON THE EVOLUTION OF THE FOOD LABELING QUALITY IN SOME COUNTRIES FROM THE BLACK SEA REGION

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Abstract

The labeling of foodstuff proves really an important priority for the free market. The producers use the label, firstly as an attractive image, with minimum information about the content. For to be open the market from the countries from Black Sea region, it is necessary to have common rules, about food labeling.

The study was conducted after collection of 986 food labels from stores from Romania, Ukraine, Federation of Russia, and Moldova. The labels were sorted according to the type of food, and after the country of origin. This was made two times: in 2013, and in 2015. Also it's were applied a questionnaire to consumers about the perception and the understanding of the information from the labels. After the labels sorting and questionnaires reading was compared the contents of each of it.

The results put in evidence the evolution of the quality of the food labeling, and the modifications of the attitude of the producers and of the interests of the consumers. There were remarks about the communication risks if the labels are poorer in possible bad information.

It is necessary to find a common program for all the countries for improving of the quality level of the communications between the consumers and food producers through the labels.

Key words: Food labeling, Quality, Legislation, Communications, Attitude.

1. Introduction

Food quality on the market depends of several factors that are found step by step from manufacturing flow to the development phases of the agro-foodstuffs status. Food labeling is a way of communication that characterizes the quality of the food elements. The information transfer from the label to the consumer is made after purchasing the food product, and usually consumers read the labels from the food products packaging only after they bought the product home.

Food labels when not misleading, can educate consumers about their food origins, the practices used for its production, or its nutritional content. The information on labels may help consumers to gain healthy, environmental and social friendly outcomes of their purchases, empowering them to "vote with their forks", or to make informed purchasing choices that more closely align with their values [1].

The quality of each person's life, as well as the entire evolution of a society, depends on the nutrition and psychical health of the human being. Food labeling

aim is to assure and offer consumers complete information's regarding the fact that - what they buy is what they want and what they need.

In the last 25 years concerns about food labeling in Europe have increased, especially regarding the guarantees of food product quality. However, there were noted several uncontrollable aspects on the market. After the year 2000 the regulations in this direction were intensified.

In order to simplify the label data for consumers, the European Union (EU) had improved the regulations regarding food product labeling, offering readable and essential information's.

The main objectives of Regulation (EC) No. 1924/2006 of the European Parliament and of the Council on nutrition and health claims made on foods have been to ensure a high level of consumer protection, effective functioning of the internal market within the EU, fair competition within the food industry, and both stimulation and protection of innovations [2].

Regulation 1924/2006 contains information on nutrition and health claims made on foods and harmonizes the provisions laid down by law, regulation or administrative action in Member States which relate to nutrition and health claims in order to ensure the effective functioning of the internal market whilst providing a high level of consumer protection. This Regulation provides opportunities for the use of health claims on foods in Europe, including reduction of disease risk claims [3].

A true single market for food products could not exist without harmonised rules for authorisation and conditions for the use of additives. In 2008, the EU released Regulation (EC) 1333/2008 on food additives which sets out the criteria by which additives are assessed, authorised and listed as approved. This regulation harmonized the European legislation of all food additives, including sweeteners and colours which were previously covered by separate pieces of legislation, and lays out the procedures for authorization, conditions of use and rules for labelling. The list of authorised food additives and their specific conditions of use can be consulted in a database on the European Commission website. Only authorized additives can be used in the EU with the foods in which they can be used and any maximum levels being described in the list. The purity required for these additives is laid down in a separate regulation defining specific purity criteria [4, 5].

Regulation 1169/2011 is referring to nutrition and health claims made in commercial communications, whether in the labeling, presentation or advertising of foods to be delivered as such to the final consumer [6]. This regulation contains information on the provision of food information to consumers, like: mandatory food information - content and presentation, weights and measures, availability and placement of

mandatory food information, presentation of mandatory particulars, language requirements, name of the food, list of ingredients, labelling of certain substances or products causing allergies or intolerances, quantitative indication of ingredients, net quantity, minimum durability date, 'use by' date and date of freezing, storage conditions or conditions of use, country of origin or place of provenance, instructions for use, and also: Voluntary food information, like: information on the possible and unintentional presence in food of substances or products causing allergies or intolerances; information related to suitability of a food for vegetarians or vegans; the indication of reference intakes for specific population groups [6].

Regulation 432/2012 is referring at the establishing a list of permitted health claims made on foods, other than those referring to the reduction of disease risk and to children's development and health.

In the last period, the food technologies became more complex. The processing of natural products for food consumption is intensive, based on the spectacular progress of sciences. Also, possibilities to evaluate the quality of food products were developed [8].

The food consumed is more appreciated as an assimilated substance for the body that may have a positive or negative role for consumer's health. Need of the producers to increase the preservation level of food products with reduced costs, or to create more attractive products, using a variety of substances that can be dangerous for some people, increase the risk of allergens or intolerances in consumption. This risk is increased also due to low level of communication about food content, between producers and consumers.

In this case the risk of food consumption comes from the:

- Quality of resources from agriculture;
- Applied food technologies;
- Used additional substances;
- Risk communications [7].



Figure 1. Some labels of analyzed food products

In the last years a lot of research was made by NUTRILAB project (NUTritional LABeling Study in Black Sea Region Countries), a multidisciplinary and comparative joint exchange program where it was identified and examined how nutritional labeling in European countries and East European countries can influence the health and welfare of population. By using food labels, it is possible to compare the nutrient content of similar food products, and see how they fit into our overall diets, and understand the relationship between certain nutrients and diseases [9].

The paper aims to present a comparative study on the evolution of food labeling quality in 4 countries from the Black Sea region, in order to establish some common measures to improve labeling, respecting the EU Regulations.

2. Materials and Methods

For this study it was used the experience of a group of 10 experts (the active members of the NUTRILAB project team) who conducted mobility's in the last 3 years in the four countries where studies regarding food labeling were done.

Because in the literature there are not defined any influence factors of the quality of food labeling, this group of experts established the following three groups of indicators of food labeling quality:

1. Compliance of information with the characteristics of food products:
 - Information veracity.
 - Duration of the validity of the information.
 - Extent that the information is complete.
 - Reflection of the food traceability.

2. Availability to inform:
 - Legibility of text.
 - Speech and language consistent known by the customer.
3. Weight warning on:
 - Positive recommendations.
 - Restrictions.
 - Contraindications.

2.1 Analysis of food labels

The study was conducted after collection of 986 food labels from stores from: Romania, Ukraine, Russia and Republic of Moldova. Manufacturer's name are removed from the table below for reasons of confidentiality.

The labels were sorted according to the type of food, and country of origin. This was made two times: in 2013, and in 2015. The distribution of labels, after their origin is shown in Table 1.

After analyzing EU regulations of nutrition and health, there were identified a number of categories of information that have a very clear specification and can be statistically analyzed. For a unified approach to the study in all the involved countries, the chosen working methodology provides additionally identification for each product label with a specific code, resulting a set of 28 information categories:

- name of the food manufacturer,
- list of ingredients,
- substances or products causing allergies or intolerances,
- quantity of certain ingredients or categories of ingredients,

Table 1. Origin labels and the distribution by types of food

Country		Rep. Moldova	Romania	Russian Federation	Ukraine	TOTAL
Labels	No	197	294	222	273	986
	from which: %	19,98	29,82	22,52	27,68	100
Type of foodstuff						
Animal origin (Food based on: meat, milk, eggs, fish)	No	68	82	50	65	265
	%	25,66	30,94	18,87	24,53	
Plant origin: (Food based on: cereals, bread and bakery)	No	51	64	41	48	204
	%	25,00	31,37	20,10	23,53	
Mixed origin: (sweets, cooked dishes)	No	56	77	47	65	245
	%	22,86	31,43	19,18	26,53	
Drinks	No	33	37	24	31	125
	%	26,40	29,60	19,20	24,80	
Fresh vegetables and fruits	No	36	41	37	33	147
	%	24,49	27,89	25,17	22,45	

- net quantity of the food, (g, mL, kg),
- date of minimum durability,
- any special storage conditions,
- name/business name, address of the food business operator, country of origin/place of provenance,
- instructions for use, medical advice,
- language, font size, the energy value (per portion or %),
- fat, protein, carbohydrates, saturates, sugars, salt, polyols, starch, fibers,
- MUFA, PUFA,
- vitamins, minerals, conclusions, other recommendations, notes.

In Figure 1 there is presented an excel sheet for few food products and data collection according to the presented methodology (8).

Proposed methodology aims to complement information of 28 fields with information type like text or binary characters 0, or 1, as applicable, and extracting useful information queries performed on rows and columns, using the „COUNTIF“. Thereby it is possible to determine the rank of compliance with a particular criterion or the percentage of products that fulfill all the criteria's simultaneously.

Proposed method has the advantage of flexibility in interpreting the data, because queries can be made for any number of specific criteria, thus allowing analyzes by taking into account the recommendations of potential binding in the future [8].

2.2 Consumers consultation

It is believed that to appreciate the quality of food labeling it is required to know the labeling effect on

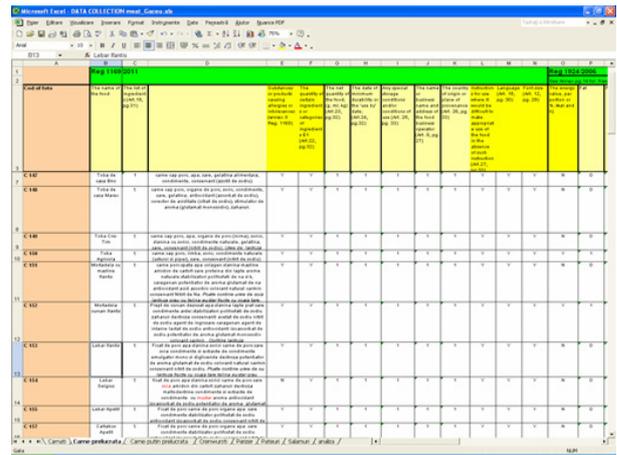


Figure 2. Example of food labeling data collection

consumers. In this case it was applied a questionnaire for 268 consumers about the quality of food labeling, considering 3 indicators: the compliance of the information, availability of information, and weighted warning. The distribution of respondents after the consumers' country of origin is shown in Table 2.

3. Results and Discussion

After sorting the analyzed labels and questionnaires the contents were compared for each label and questionnaire in part.

3.1 Study of the food labels

After analyzing the label content, the experts have validated for each one, the level of compliance with the EU Directives about content and form of the food labels. Then it was established the statistics presented in Table 3.

Table 2. Distribution of respondents

Country	Rep. Moldova	Romania	Russian Federation	Ukraine	TOTAL	
Consumers questioned	No	71	84	51	62	268
	%	26,49	31,34	19,03	23,13	

Table 3. State of the comparison between the assessments of compliance with EU directives

Country	Rep. Moldova	Romania	Russian Federation	Ukraine	TOTAL	
Labels collected						
2013	No	96	136	106	124	462
	%					
2015	No	101	158	116	149	524
	%					
Total		197	294	222	273	986
The level of compliance with EU Directives						
2013	No	50	79	58	63	250
	%	52,08	58,09	54,72	50,81	54,11
2015	No	71	129	89	102	391
	%	70,30	81,65	76,72	68,46	74,62

In the graph from Figure 3 (correspondent with Table 3) it can be observed the state of the comparison between the assessments of compliance with EU directives.

It may be noted a substantial increase in the quality level (with about 20%), but further more efforts are needed for every country and every manufacturer to respect all EU directives.

3.2 Consumers consultation

It was applied the psychological experiment using the perception of the respondents and the expertise of the 10 experts from the NUTRILAB project team, in assessing the levels of the three indicators of quality of food labeling, appreciating with scores of 1 - 10 (Table 4).

In the graph from Figure 4 (in correspondence with Table 4) it is easier to observe the summary of the assessments made by consumers on quality indicators of the food labeling.

Also, it can be noticed a significant increase of the consumer satisfaction regarding the content and form of food labels.

4. Conclusions

- The results put in evidence the evolution of food labeling quality, modifications of the producers' attitude and the consumers' interests. Evolution of global indicators for food labeling quality supports food market opening.

- Results of this study have multiple meanings on the importance of accurate food labeling and population education towards food consumption is consistent with their need for to keep their health.

- Noting the deficiencies still existing, we have to stress that there is a need for more special measures. It is necessary to find a common program for all countries for improving of the quality level of the communications between the consumers and food producers through the labels. It is necessary labels to mention all details about food intolerance risks.

- The differences between countries are due to the conditions of EU approach. The Romania's superior position is justified by the fact that it is part of the EU, with almost all legislation in concordance with EU directives.

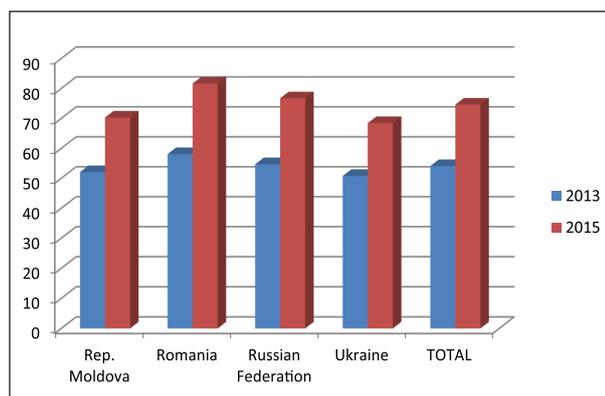


Figure 3. Graph (correspondent with Table 3) about the state of comparison between the assessments of compliance with EU directives

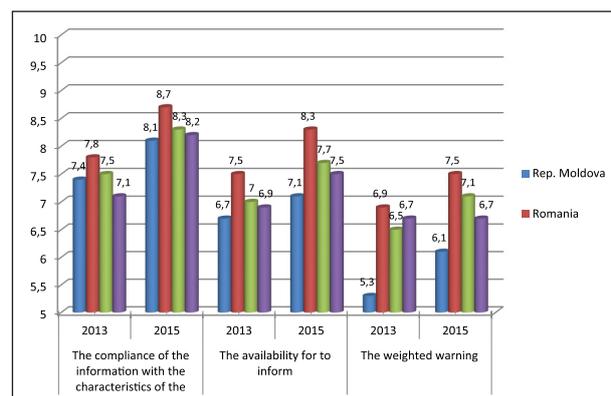


Figure 4. The graph (in correspondent with table 4) with the statistical summary of the assessments made by consumers on quality indicators of the food labeling

Table 4. Statistical summary of the assessments made by consumers on quality indicators of the food labeling

Country		Rep. Moldova	Romania	Russian Federation	Ukraine	Average
Compliance of the information with the characteristics of the food	2013	7,4	7,8	7,5	7,1	7,45
	2015	8,1	8,7	8,3	8,2	8,33
Availability for to inform	2013	6,7	7,5	7,0	6,9	7,03
	2015	7,1	8,3	7,7	7,5	7,65
Weighted warning	2013	5,3	6,9	6,5	6,7	6,35
	2015	6,1	7,5	7,1	6,7	6,85
Average consumer satisfaction about labeling quality	2013	6,47	7,40	7,00	6,9	6,94
	2015	7,30	8,16	7,70	7,46	7,65

Also, the substantial progress in rest of countries from the Black Sea region is due to the expansion degree of the market globalization.

- In the same time are made some remarks about the communication risks if the labels are poor in information. To ensure a better health of population, it is required a complex legislation for a food market discipline. This will determine a reduction of food risks. By improving the food labeling system, existing risk communication system will improve too, resulting with more accurate and effective communication between producers and consumers.

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