Food Quality Labels; Insights from Customers in Two Selected European Countries

Šárka Velčovská, Hana Janáčková, and Fridrik R. Larsen

Abstract—**The paper deals with insight from customers in the Czech Republic and in Iceland into food quality labels. The aim of the paper is to compare customer attitudes from both countries and to show how quality labels are familiar to customers, how they are perceived, and if customers have interest in this topic. The paper is also focused on willingness of customers to pay a higher price for products certified with quality labels. The method of analysis, questioning, synthesis and deduction were used for research aims fulfilment. Theoretical part of the paper gives the definitions of food quality and quality labels. Further, selected food product quality labels in the Czech Republic and in Iceland are specified. In the next part, the results of marketing research are presented. A total of 267 respondents, 150 of Czech and 117 of Icelandic, were interviewed. For research results analysis, statistical methods including Pearson´s chi–square test of independence, Pearson´s coefficient of contingency or coefficient of association were used.**

Index Terms—**Food products, quality, quality labels, consumer attitudes, Iceland, Czech Republic.**

I. Introduction

The paper summarizes results from marketing research which was conducted in terms of the research project "Comparison of Food Quality Label Systems in Iceland and Czech Republic" supported by the EEA Financial Mechanism and Norwegian Financial Mechanism and the State budget of the Czech Republic through the Research Support Fund (CZ). We have focused on food quality labels and their role for customers' decision making when buying food.

In accordance with research topic, first of all we specify terms "*quality*", "*food quality*", "*certification*", and "*quality label*" which we consider as a necessary theoretical basis for understanding follow-up practical part.

Quality has many meanings, many of them are subjective. In the quality management field, according to ISO 9000:2000, *quality* is defined as "the degree to which a set of inherent characteristics fulfils requirements" [1].

Another definition explains quality as "the totality of features and characteristics of a product that bear on its ability to satisfy stated or implied needs" [2].

Quality is also defined as fitness for use or, specifically for food, fitness for consumption. Following that definition, *food quality* can be explained as the degree to which a set of characteristics meets consumer requirements, including safety requirements, sanitary requirements, conformity to commodity standards, nutritional requirements, and sensory requirements.

According to Grunert [3], quality has an objective and a subjective dimension. "Objective quality refers to the physical characteristics built into the product and is typically dealt with by engineers and food technologists. Subjective quality is the quality as perceived by consumers. Only when producers can translate consumer wishes into physical product characteristics, and only when consumers can then infer desired qualities from the way the product has been built, will quality be a competitive parameter for food producers." Thus, quality can be described as the subjective and objective requirements necessary to satisfy the needs and expectations of the consumers.

Food quality might be defined differently since it is a term defined by consumers, producers, distributors, certification institutions or any other subjects based on subjective and objective measurement of the product. Food quality definition also differs between countries and cultures and it is difficult to define this term on an international level [2].

There are many food producers in the market, food products quality is diverse. Customers feel asymmetric information regarding food products and their quality (since typically they all are assumed to be of the same quality). Consequence of that situation is adverse selection in the food products market. Consumers differ in how much they value the good, but these valuations are not observable to the producer. The producer offers the customers a menu of different–sized bundles at different prices. High-quality food is pushed out by low-quality food and there is the press on decreasing price of all food. Some producers have decided to support sales of their high-quality products with using strategy focused on minimisation of information asymmetry. One possibility is to let certify their products by third independent body and to obtain quality label. Through the official quality label, they can offer clearer information about quality of their products to the customers.

Certification means "procedure by which a third party gives written assurances that a product or a process is in conformity with a corresponding standard. With certification,

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a product or process may be labeled as certified" [2].

Quality label is term for "symbol that can be put on a product (or product packaging) indicating that the product or the process to make the product complies with given standards and that this compliance has been certified" [2]. A label is usually used in communication with the end consumer.

The purpose of quality labels is to inform consumers about some specific characteristic of products, to facilitate identification of food products with certified quality and to promote such products. According to Velcovska and Marhounova [4], to consumers the quality labels should be a guarantee of quality, healthy and safe products. There is a question if guarantee of food quality declared through the quality labels is important for consumers, if quality labels are recognized by consumers, how consumers perceive them, and also if quality labels are important factor influencing consumer purchases.

Two marketing researches regarding quality labels used for food products were conducted, in the Czech Republic and in Iceland. We wanted to know and compare the situation in the Czech Republic with a country which is not in the membership of EU, but still member of EEA and therefore respecting the same generally valid food quality norms as in EU. For this reasons, on the focus was set on Iceland. The aim of the research study is to compare findings in the above mentioned countries.

II. Definition of Food Quality Labels used in Czech and Icelandic Food Products Market

Food quality labels can be divided into four categories: regional, national, European (EU) and global (world–wide) [5]. As it is shown in the Table I, for our research we have chosen three national labels from the Czech Republic, two national labels from the Icelandic market, four European labels and three world labels. Two of the world labels are used in both countries, the third is frequent label in Iceland.

The KLASA label indicates the best quality food and agricultural products from the Czech Republic. The label is issued by the Ministry of Agriculture Czech Republic [6].

Czech BIO label – product of organic farming. Ministry of Agriculture is participating in financially supporting the foundation of organic farms, in cooperation with the Association of Organic Farmers PRO–BIO. Methodical Instruction for Organic Farming was introduced as a united directive of organic farming in the Czech Republic [7], [8].

Regional Food – food or agricultural product that is produced in the region and comes mainly from domestic sources. Regional food logo can be used only on approval of the Czech Ministry of Agriculture [9], [10].

Traditional Speciality Guaranteed – highlights traditional character, either in the composition or means of production [11], [12].

Protected Geographical Indication – covers agricultural products and foodstuffs closely linked to the geographical area. At least one of the stages of production, processing or preparation takes place in the area [11], [12].

TABLE I: Summary of Surveyed Labels

Czech labels			**World labels**		
Klasa	Czech BIO	Regional food	MSC	Fair Trade	Demeter
Icelandic labels		**EU labels**			
IRF	TÚN	TSG	PGI	PDO	EU BIO

Protected Designation of Origin – covers agricultural products and foodstuffs which are produced, processed and prepared in a given geographical area using recognized know–how [11], [12].

EU Organic Farming - From 1 July 2010, the EU introduces a new organic logo to ensure consumer protection and common standards. The production and placement of organic products with labels and logos on the EU market follows a strict certification process that must be complied with [13].

Fair Trade label – certifies that products meet the social, economic and environmental standards set by Fairtrade. Fair Trade is a way of trade which offer direct and effective support to disadvantaged farmers and artisans from developing countries in Afrika, Asia and Latin America. Buying Fairtrade products helps producers struggling to improve their lives [14].

Demeter - products from biodynamic agriculture. Demeter is ecological label for organically produced foods. The holistic Demeter requirements exceed government mandated regulations. Not only do they exclude the use of synthetic fertilizers and chemical plant protection agents in agricultural crop production, or artificial additives during processing, but also require very specific measures to strengthen the life processes in soil and foodstuffs [15].

MSC ecolabel certified sustainable seafood. The MSC ecolabel provides independent, third party verification that seafood product comes from a sustainable fishery. The ecolabel has been shown to add value to a brand by enhancing its sustainability credentials [16], [17].

Iceland Responsible Fisheries – logo indicates Icelandic origin of fish catches in Icelandic waters and responsible fisheries management. The logo provides opportunities for stakeholders in the value chain of Icelandic seafood to highlight Icelandic origin. The logo can be used on packaging of products produced from catch of Icelandic seafood or in advertisements. Logo use is authorised by the IRF Foundation [18], [19].

TÚN – certificated organic label for organic

products in Iceland. TÚN's regulations are in accordance with Icelandic and European legislation on organic issues. Certified organic products have a unique market position in the sense that the whole chain of custody, from the cultivation or collection of natural ingredients, to the final packaging, is monitored by an independent third party [20].

III. Marketing Research Methodology

The research study was carried out in February and March 2011 with personal questioning method based on a structured questionnaire. In the Czech Republic the sample consisted of 150 respondents [21]. 117 respondents were asked in the Icelandic market. The age range was from 18–65 (according to age structure of population, it was based on official statistical data), and the sample was a non–probability one [22], [23]. A judgment sampling technique was used. In both countries, we have determined only sex structure of respondents in advance; we wanted to ask about 50 % of male and 50 % of female. In the Czech Republic, we were given the answers from 51 % of males and 49 % of females, in Iceland it was 58 % males and 42 % of females.

IV. Marketing Research Results

The results of the marketing research were analysed by using statistical methods. To indicate whether significant differences exist between Czech and Icelandic consumers' attitudes, the statistical methods including Pearson´s chi–square test of independence, Pearson´s coefficient of contingency or coefficient of association were used.

A. Food Purchases

The first step was to find out how strong is respondents´ *responsibility for food purchases*. From the Fig. 1 is evident, that in Iceland, greater percentage of respondents has full responsibility for food purchases than in the Czech Republic.

The chi–square test of independence was used, the value of test criterion is X^2_{exp} = 1,845.[1] In addition, the Pearson´s coefficient of contingency was quantified and its value is 0,083. Statistic testing has confirmed independence between respondents´ country and responsibility for food purchases.

Further to our research, we investigated which *factors* are *influencing food purchases*. The main factors for both, Czech and Icelandic consumers are price and previous experience (about 80 %), the importance of the other factors are different. For Czech consumers, sales promotion, minimum shelf life of product, brand, and family member priority are important. Icelandic consumers make purchase decisions mainly on the basis products ingredients, health benefit and nutrition information.

If respondents *prefer domestic or foreign food products* is shown in the Fig. 2. It is evident, the country of food products origin is not important for 50 % of Czech respondents. The second half of Czech respondents prefers domestic products. Icelandic respondents are more oriented to domestic products (64 %).

The chi–square test of independence was used, the value of test criterion is X^2_{exp} = 6,333.[2] The value of Pearson´s coefficient of contingency is 0,152. Statistic testing has confirmed dependence between respondents' country and their preferences.

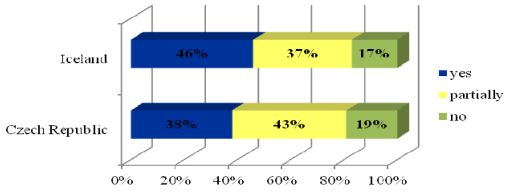

Fig. 1. Responsibility for food purchases.

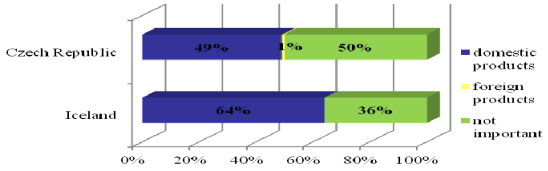

Fig. 2. Country of food products origin preference.

B. Spontaneous and Aided Awareness of Food Quality Labels

As it results from the Fig. 3, Czech respondents have higher level of *spontaneous awareness* of food quality labels (48 %) than Icelandic respondents (21 %). The statistic dependence between respondents' country and spontaneous awareness of labels was confirmed. The test of association was used, the value of test criterion is 19,021.[3] The value of coefficient of association is –0,275.

Czech consumers spontaneously mainly know national food quality labels, the most known labels in the Czech Republic are Klasa (41 % respondents) and Czech BIO label (19 % respondents). Some food quality labels were only mentioned by a small percentage of Icelandic respondents. The Icelandic respondents most often knew Fair Trade (7 % respondents), Nordic Ecolabel – Nordic Swan (4 %), EU BIO label (4 %), TÚN (3 %), KRAV label and Demeter (2 %).

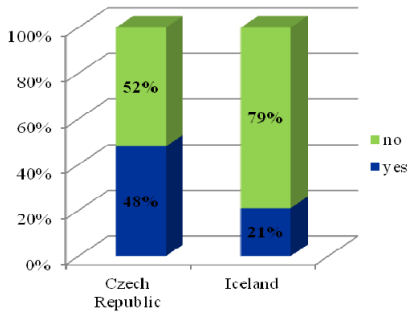

Fig. 3. Spontaneous awareness of food quality labels.

Furthermore, the food quality labels logos were shown to the respondents for testing *aided awareness*. Respondents were asked to mention not only whether they recognize the logo, but also to explain the meaning of the labels.

As it is presented in the Fig. 4, with the exception of Czech Klasa label and Czech BIO label, more than 60% of Czech respondents are not aware food quality labels and their

[1] Significant at 0,05 level

[2] Significant at 0,05 level

[3] Significant at 0,05 level

meaning. High knowledge of Klasa and Czech BIO label is influenced by the support from the Czech government and long–term advertising campaign. The other factor influencing greater knowledge of Czech BIO label is popularity of bio products in the Czech Republic nowadays.

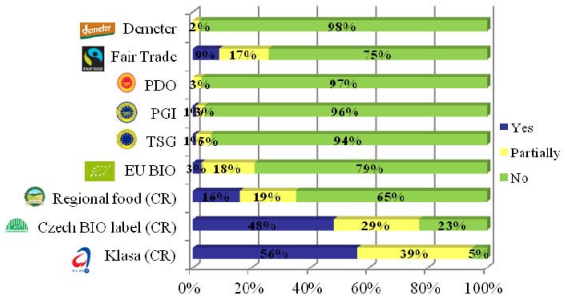

Fig. 4. Aided awareness of food quality labels – the Czech Republic.

In Iceland, the most recognized label is Fair Trade; the other labels are unknown to more than 70 % respondents. The results are shown in the Fig. 5.

Generally, the aided awareness of food quality labels is low. Czech respondents have better knowledge of their national quality labels than Icelandic respondents. On the other hand, greater knowledge of Demeter and Fair Trade labels was found in Iceland.

Subsequently, the respondents were asked to determine the three *most often seen labels* on food products packaging. In the Czech Republic, from above mentioned reasons, the most often seen are Klasa (91 %) and Czech BIO (68 %) labels, followed with large gap by EU BIO label (9 %). Fair Trade (32 %), TÚN (24 %) and IRF (15 %) are most often seen labels in Iceland. While Czech respondents perceive mainly Czech quality labels, and the other labels they somehow ignore, small percentage of Icelandic people register all scale of surveyed labels.

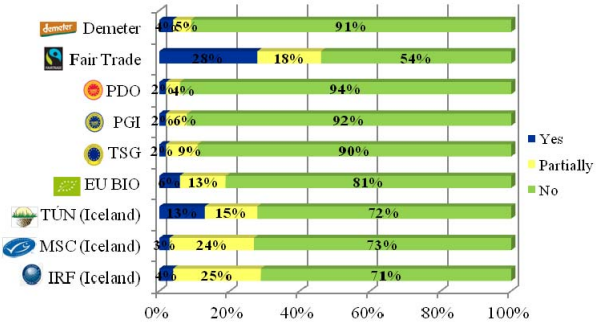

Fig. 5. Aided awareness of food quality labels – Iceland.

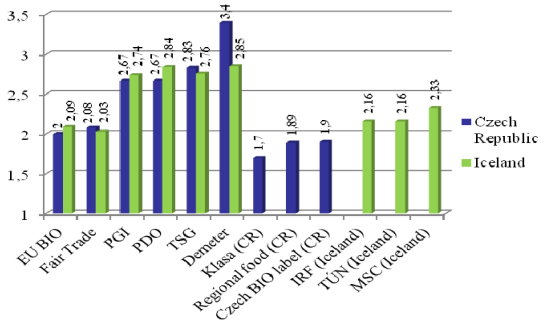

Fig. 6. Credibility of labels.

C. Perceived Credibility of Food Quality Labels

Respondents were asked if they perceive the food quality labels as credible. *Credibility of labels* was evaluated on a scale from 1 (absolutely credible) to 4 (absolutely incredible). The values in the Fig. 6 were calculated as average from respondents´ evaluation on the scale.

For Czech respondents, the most credible are national labels (Klasa, BIO, and Regional Food) and EU BIO label. Icelandic respondents perceive Fair Trade and EU BIO label as most credible, the Icelandic national quality labels are following.

D. Interest in Information Regarding Food Quality Labels

We expected low knowledge of food quality labels; therefore we asked if respondents are interested in *information regarding food quality labels*. As it results from the Fig. 7, majority of respondents are interested in getting information regarding food quality labels. It is positive finding. It's evident from the above presented results that respondents have limited awareness about the labels, but they have shown interest about this certain matter. We assume that low knowledge of quality labels is caused by shortage of information, or that information is inadequately presented or non–existent.

Statistic testing has confirmed dependence between respondents' country and their interest in information regarding food quality labels. Czech respondents have higher interest than the Icelandic. The test of association was used; the value of test criterion is 4,010.[4] In addition, the association coefficient was quantified and its value is –0,131.

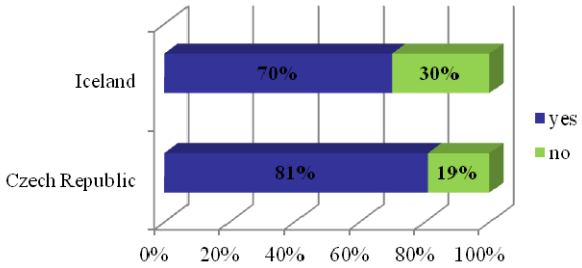

Fig. 7. Interest in information regarding food quality labels.

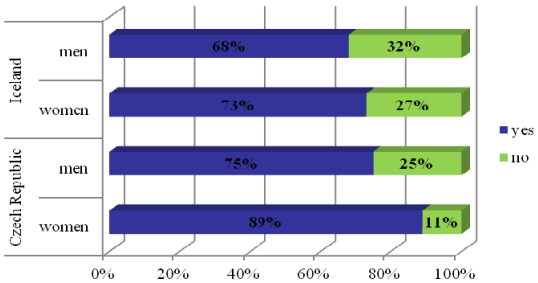

Fig. 8. Interest in information regarding food quality labels according to sex of respondents.

As it is shown in the Fig. 8, women from both countries have greater interest about food quality labels. The test of association was used; the dependence between sex of Czech respondents and their interest regarding information about the labels was confirmed, the value of test criterion is 4,198.[5]

[4] Significant at 0,05 level
[5] Significant at 0,05 level

Value of association coefficient is 0,185. In Iceland, statistic testing confirmed independence between sex of respondents and their interest about information, the value of test criterion is 0,225[6], value of association coefficient is 0,063.

E. Willingness to Pay a Higher Price for Labeled Products

There is a presumption that products with certified quality are more expensive. One of the purposes of marketing research was to examine *if respondents are willing to pay higher price* for products labeled with these quality labels. In both countries, more than 50 % of respondents would pay more. Statistic testing has confirmed independence between respondents' country and their willingness to pay higher price for labeled products. The test of association was used; the value of test criterion is 1,221.[7] The association coefficient has value 0,075.

Further, we have tested if willingness to pay higher price for labeled products is influenced by sex or income of respondents. From the Fig. 9 results that women in the Czech Republic are more willing to pay higher price for labeled products than other respondents.

Statistic testing has confirmed independence between sex of respondents and their willingness to pay higher price for labeled products. The test of association was used; the value of test criterion for Czech Republic is 2,940 and for Iceland 0,002.[8] In addition, the association coefficient was quantified; its value is 0,154 for Czech Republic and –0,013 for Iceland.

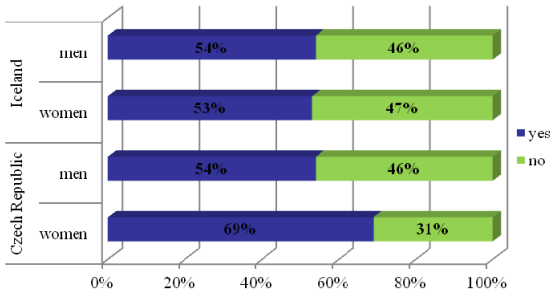

Fig. 9. Willingness to pay higher price for labeled products according to sex of respondents.

Focusing on income of respondents, the differences in willingness to pay higher price for labelled product among income categories of respondents are small. There is one paradox – the highest income group of respondents is less willing to pay higher price than other income categories. The chi-square test of independence confirmed independence between income of respondents and their willingness to pay higher price for labeled products. The value of test criterion X^2_{exp} is 8,624 for Czech Republic and 0,869 for Iceland.[9] Values of Pearson´s coefficient of contingency are 0,233 (Czech Republic) and 0,086 (Iceland).

In response to the previous question, we asked respondents *how much more they are willing to pay* for products labeled with IRF, TÚN, Klasa and Czech Bio label than for unlabeled products. The results are presented in the Table II.

From obtained data we have estimated *price elasticity of demand* for five selected products: 1 fish, 1 l milk, 1 kg meat, 1 kg fruits and ½ kg pastries. We used 4 scales; price is higher for labeled product than for the unlabeled by 0 to 10 %, 11 to 25 %, 26 to 50 % and 51 % a more.

Price elasticity of demand is standard for all above–mentioned products. If price is relatively low, demand is inelastic. If price is relatively high, respondents are very sensitive for change of price. However, as marketing research results show, there is one exception, it is Czech BIO meat, we noted positive sloped demand curve, which is typical for Veblen goods. Regarding other products, our findings are following. If price is higher up to 10%, respondents are less sensitive to price change. If price is higher by 11 to 25 %, respondents are sensitive for fish labeled with IRF label, for milk labeled with TÚN and Klasa label, for fruits with Klasa label and for pastries with all labels. If price is higher by 26 to 50 %, respondents react in price very sensitively, the demand is very elastic. Price higher than 51 % is not acceptable for respondents.

TABLE II: WILLINGNESS TO PAY A HIGHER PRICE FOR LABELED PRODUCTS

		IRF (Iceland)	TÚN (Iceland)	Klasa (CR)	Czech BIO label (CR)
fish	0–10%	71%	–	–	–
	11–25%	25%	–	–	–
	26–50%	0%	–	–	–
	51 and more %	4%	–	–	–
1l milk	0–10%	–	79%	73%	50%
	11–25%	–	20%	27%	46%
	26–50%	–	1%	0%	4%
	51 and more %	–	0%	0%	0%
1 kg meat	0–10%	–	55%	52%	40%
	11–25%	–	39%	47%	55%
	26–50%	–	6%	1%	4%
	51 and more %	–	0%	0%	0%
1 kg fruits	0–10%	–	52%	64%	49%
	11–25%	–	42%	33%	47%
	26–50%	–	6%	3%	4%
	51 and more %	–	0%	0%	0%
1/2 kg pastries	0–10%	–	67%	83%	71%
	11–25%	–	30%	16%	26%
	26–50%	–	3%	1%	3%
	51 and more %	–	0%	0%	0%

V. SUMMARY AND CONCLUSION

The marketing research results show that food quality labels are interesting for respondents from both countries; unfortunately they have limited information and prompt knowledge regarding the labels. This is the main reason why respondents are not able to fully use these labels for their purchase decisions. They register these labels, but the majority of them don´t know what this labels mean.

In the Czech Republic, the national quality labels have a good position, as they are well recognized by respondents. National labels in the Czech Republic have a good advertising support in the mass–media. The situation is worse in when it comes to the European and World labels, as only a very small percentage of customers know these labels and their meaning. In Iceland, only the Fair Trade label is recognized (approximately by half of the respondents),

[6] Significant at 0,05 level
[7] Significant at 0,05 level
[8] Significant at 0,05 level
[9] Significant at 0,05 level

partial knowledge was found for domestic labels TÚN and IRF (Iceland Responsible Fisheries label). Other labels have a minimum knowledge. TÚN label was supported by government. It neither was support for marketing of the label nor was one planned to its knowledge. The only support was for the introduction of the label to new producers and to develop new standards for new products.

The problem is that respondents react to the logos of labels, however they don´t know accurate meaning of labels. The recommendation for the producers, importers and administrators of labels is to improve promotion of these labels. The quality labels on food products packaging should be perceived by customers not only as stick on the packages, but labels should give valuable information. It would make easier their purchase decisions and facilitate to differentiation of product with certified quality from the others. Subsequently, it could bring benefit for holders of labels, for example higher sales, better image or competitive position on the market.

The marketing research brought lot of findings; only part of them is presented in this paper. Other results expected to be published in future. It would be interesting to move forward with this research study; and finally the authors would like to realize consequential research as well.

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