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To cite this article: E A Demakova *et al* 2020 *IOP Conf. Ser.: Earth Environ. Sci.* **421** 022054

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Study of consumer perception of food quality as a basis for territorial branding

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Abstract. Development of agricultural production in Russia is seen as an important condition for food and economic security not only in agricultural production territories, but also in the territories where agribusiness is a socially significant industry that provides employment for the population. Agribusiness development requires multifaceted state support for producers, aimed not only at increasing the volume of agricultural production, but also at increasing its competitiveness by improving its quality, as well as creating and promoting regional product brands. The need to ensure effective support for agribusiness based on territorial branding determined the necessity to identify priority areas for food branding. The research conducted by the authors proved the need to carry out factor analysis of consumer perception of quality for food branding.

1. Introduction

Food production in the Russian Federation plays an important role in the development of its territories, since, on the one hand, life, health and working capacity of the population directly depend on the quality and safety of food and, on the other hand, population's involvement in agribusiness ensures their employment in rural areas and tax revenues in the local budget [1]. Additional opportunities for the agricultural sector development in Russia are associated with ensuring competitiveness and entry of Russian agricultural products into the foreign market, as well as implementation of its export potential through improved quality. State support for agricultural production in solving these pressing issues is seen as an important direction of the national economy regulation [2].

Thus, the state participation in creating conditions for improving the quality and competitiveness of regional agricultural products lies in line with the strategies for regional socio-economic development. Attention to ensuring competitiveness of agricultural products through its branding has been recently actualized. Experience in supporting regional product brands has been currently gained in Russia and other countries [3, 4].



However, even territorial branding tools activation by state and local governments does not bring the desired result. The authors of the present paper consider that increase in food branding efficiency requires defining the priority areas of territorial product branding based on the identification of:

- consumer needs for certain parameters of food quality and their satisfaction level;
- primary natural resources potential of territories, as well as organizational and technological capabilities of manufacturers to ensure uniqueness of consumer products characteristics;
- parameters for product quality verification as a condition for providing consumers with objective information, development of competition between manufacturers and stimulation of sustainable competitive advantages [5].

The results of the study on consumer perception of food quality can be an objective source of information on the priority areas of food branding. The analysis of contemporary publications has demonstrated either theoretical grounding of this phenomenon structure [6], or fragmented applied studies to assess the quality of goods perceived by consumers through individual criteria [7].

To fill the gap of evidence-based information on consumer perception of food quality that is necessary to develop recommendations for shaping the agro-industrial policy of Krasnoyarsk Krai, the authors of the present article studied factors determining consumer perception of food quality, as well as identification and measurement of the criteria for choosing a product by the residents of Krasnoyarsk.

2. Experimental part

To assess consumer perception of quality as an integral attribute of product branding, the structure of consumer values associated with various aspects of quality perception was defined. Influence on these values with various branding tools, as well as their reflection in the product brand value system, can give an opportunity to attract customers' attention, create and strengthen their commitment and loyalty to a product brand, as well as increase brand equity [8].

However, consumer values, which determine their perception of food quality and the choice of a particular brand, are latent quantities that cannot be measured directly, and it is often difficult for consumers to perceive their definition. These values are formed in consumers' mind under the influence of a whole complex of sensations and perceptions of various product's characteristics, its external and internal properties that are perceived by the sense organs or assessed in the process of thinking. In other words, the consumer values that determine their perception of a product quality can be considered and analysed as factors that are hidden from direct measurement, but are available for assessment through a series of explicit variables that characterise consumers' reaction to specific product properties in the process of its selection.

To detect, evaluate and identify the consumer values or factors that determine the consumer perception of food quality when choosing food products, the factor analysis of the results of survey of 283 consumers in Krasnoyarsk, segmented into 6 groups: men and women aged from 18 to 65, has been conducted in the present study. Using the expert evaluation method, 12 characteristics of a product reflecting various aspects of its quality were identified in advance. In table 1, these characteristics are indicated as measured variables. Variables were measured by calculating the respondents' positive answers about the use of each of the variables when choosing 13 homogeneous groups of food products included in the consumer basket: bread, pasta, potatoes, vegetables, berries, confectionery products, meat products, fish products, dairy products, eggs, vegetable oil, flour and herbal tea. The variables values could be in the range from 0 to 13.

The factors determining the consumer perception of food quality when choosing food products were analysed with the use of the software IBM SPSS Statistics 26. Acceptable sampling adequacy for the factor analysis is confirmed by the Kaiser-Mayer-Olkin measure (KMO) of 0.663. The second validation criterion for the factor analysis results is the Bartlett's test of sphericity, which statistical significance is quite large ($p < 0.05$). This criterion confirms that correlations between the variables

significantly differ from 0. The factors were selected using the principal component analysis, which involves inclusion of the factors which eigenvalues exceed 1.0. To improve the desired factor model, the factors were rotated using the VARIMAX method with Kaiser normalization; the rotation converged in 6 iterations.

3. Results

Statistical processing of the consumer survey results gave an opportunity to identify four factors with a total, that is cumulative, percentage of the full explained variables variance of 69.239. This means that the four value factors identified by the authors determine the consumer perception of products quality when choosing food products by more than 69%, and the constructed factor model is quite acceptable.

The factors rotation made it possible to obtain a transformed matrix of factor loading, that includes only significant correlation coefficients of the identified factors and measured variables that exceed 0.4 (table 1). The matrix gives an opportunity to see the variables dislocation by factors and conduct a content interpretation of these factors.

Table 1. Factor loading on the measured variables.

Measured variables	Factor 1	Factor 2	Factor 3	Factor 4
Labelling	0.821	-	-	-
Information signs	0.777	-	-	-
Storage period	0.663	-	-	-
Utility	0.600	0.440	-	-
Taste and smell	-	0.840	-	-
Freshness	-	0.784	-	-
Organic ingredients	-	0.761	-	-
Producer awareness	-	-	-	0.814
Retailer awareness	-	-	-	0.717
Place of production	0.431	-	-	0.687
Product appearance	-	-	0.852	-
Type of packaging (based on the study results)	-	-	0.745	-

Factor 1 after rotation has a maximum eigenvalue of 2.490 and explains 20.8% of the total variance of all the variables, but it most closely correlates with such product characteristics as labelling, information signs, storage period and utility. The content analysis of these characteristics gives an opportunity to determine the underlying factor as “products’ quality promised by a producer”. Labelling and information signs contain key information about the product quality from its manufacturer: ingredients; nutrition, energy and biological facts; the use of food supplements; quality confirmation procedures, etc. Moreover, all the above information is in the form of a promise or declaration from a producer, and the degree of its influence on a consumer depends on the degree of consumer confidence to a producer and its labelling.

This leads to the conclusion that the most promising branding tool is independent product quality assessment procedures initiated by the local authorities, as well as the federal regulatory bodies’ departments. The results of such quality assessment should be reflected in the product labelling and widely covered in the regional mass media to inform consumers about the content of information signs concerning the quality and utility of products.

Factor 2 was interpreted as a “subjective consumer assessment of quality” due to the increased loading of this factor on such characteristics as taste and smell, product freshness and organic ingredients. This factor accounts for 19% of the total variance of all the measured variables. Subjectivity and independence of product characteristics’ perception determined by this factor allowed to identify it as a separate value in the structure of consumer perception of food quality.

Factor 3 has the most pronounced factor loadings on two product characteristics: product appearance and type of packaging. This factor determines an external impression of a product and visual perception of its attractiveness to a buyer either by its colour and product consistency (in case of transparent packaging), or by its shape, texture and colour scheme of the package. In its content, this factor is similar to Factor 2, since it determines product's characteristics that are directly and independently evaluated by a consumer. Therefore, Factor 3 was identified as "visual assessment of quality by a consumer". Its share in explaining the total variance of the variables of our model is the smallest – 13.5%, but its role in branding is great in terms of attracting consumers' attention to a new product, as well as ensuring product awareness among numerous analogues.

Factor 4 has the most pronounced factor loading on three product characteristics: producer awareness, retailer awareness and place of production. This factor was identified as "quality reliability", since product characteristics that are closely correlated with it are significant for consumers, primarily as a guarantee of a product quality, which is manifested in sustainability of the most preferred properties regardless of the time of purchase. Such sustainability, combined with satisfaction with quality, leads to customer confidence and his/her desire to buy a product again, as well as to be loyal, despite competitors' promotions, appearance of new products and the need to spend additional time and money to purchase a preferred brand. The "quality reliability" factor explains the total variance of the variables in our model by 15.9%, and the choice of methods to improve consumer perception of quality by controlling this factor depends on the magnitude of its loading on the product characteristics associated with it.

4. Conclusion

The factor analysis of the consumer survey results demonstrated that in the structure of values related to the perception of food quality, the factor "products' quality promised by a producer" exerts a considerable influence over the choice of a product. Increasing the degree of consumer confidence in a manufacturer and its labelling, it is possible to significantly increase their loyalty to a local product brand.

The second most significant factor "subjective consumer assessment of quality" is determined by the sensory perception of a product's taste and smell, its freshness and consumers' desire to buy organic products. The use of this factor in the process of a product brand formation and promotion involves special interaction with consumers, such as degustation, consumer quality testing, as well as expert evaluations and laboratory tests confirming that a product is organic.

The similar in its content factor "visual assessment of quality by a consumer" occupies only the fourth place in the structure of values that form consumer perception of quality. However, the need for regulation by this factor is determined by the necessity to ensure brand awareness. Creation of the holistic image of a product, embodying such values as consumer properties uniqueness, as promised by a producer and subjectively perceived quality, as well as reliability of a product quality in its appearance and packaging, is the most effective target direction.

The factor "quality reliability", in its turn, demonstrated the most pronounced loading on producer awareness in the proposed model. Therefore, when promoting their product brands, producers need to pay extra attention to the information on production factors sustainability that ensure quality reliability of a product. It is advisable, for instance, to inform customers about the current certified quality management system at an enterprise, or about awards received at various quality contests.

The conducted factor analysis revealed a specific feature of consumer perception of food quality by the residents of Krasnoyarsk, which lies in a relatively low correlation the "quality reliability" factor and the place of production. This fact indicates a high potential for improving consumer perception of the regional products' quality by providing consumers with objective evidence of the unique properties of local raw materials and technologies that provide increased product utility.

Acknowledgments

The project "Concept and Models of Product Branding of The Macro-Region "Yenisei Siberia" was

funded by Krasnoyarsk Regional Fund of Science.

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