

## CONSUMER PERCEPTION REGARDING THE SENSORY CHARACTERISTICS OF TRADITIONAL AND REGIONAL PRODUCTS. CASE STUDY

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### Abstract

*In the present study, we propose to analyze the consumer's perception regarding the sensory characteristics of traditional products. The research was carried out in May 2022 as part of the Traditional Products Raffle that takes place weekly in Bd. Marasti no. 61 Bucharest, and assumed the comparison of the sensory characteristics of four types of cheeses, namely: cheese in fir bark, smoked cheese, cheese with cumin and curd with dill. The tasting was done by 83 people, and the appreciation of sensory properties was measured with the help of non-parametric tests that allowed us to determine consumer preferences regarding traditional dairy products. By using the hedonic test and the scalar method, the data were processed statistically, and based on the obtained results, conclusions were formulated that highlighted the fact that the most appreciated traditional product from the category of those tested was "Smoked cheese" (with 7.06 points), followed by "Cheese with cumin" (6.98 points), "Cheese in fir bark" (6.94 points) and "Curd with dill" (6.71 points). The purpose of the research was to highlight the role that the appreciation of the sensory characteristics of food products has in the valorization of traditional or regional products, but also the application of innovation in obtaining new products that contribute to the development of the local economy and to the increase of income in rural areas.*

**Key words:** consumer perception, sensory characteristics, traditional products, regional products, cheeses

### INTRODUCTION

Sensory analysis is a scientific method that evaluates the experimental results that are collected from the sample of consumers or trained or untrained evaluators who express their preferences regarding the characteristics of food products and which are the result of their own, subjective decision, but based on personal experience, by the environmental variables, by the characteristics of the products and that interact with the method of carrying out the survey [5, 6].

Although sensory analysis has often been associated with expressing the opinions of product experts, it currently has a proactive role, creating products based on unique sensory properties identified by consumers in relation to their preferences [11, 13].

Traditionally, sensory analysis was more product-oriented and followed the internal validity of the respective products. That is why it must be completed by marketing that

assumes external validity by measuring the behavior of the consumer, therefore of the market [1]. The differences between the two forms of testing are also related to the respondents, the type of stimuli used, the applied scaling methods or the testing method [7, 12].

Realizing an integration of the two ways of verifying consumer preferences can contribute to obtaining useful information in the development of products and the food industry [8, 12].

As far as traditional or regional products are concerned, they are more and more sought after on a market with increasingly processed foods, having the particularity that they do not contain additives, preservatives or other synthetic additions and that they are obtained by methods that contribute to preserving the characteristics their organoleptic properties [15].

At the level of the European Union, there is a voluntary system for labeling these products

and indicating their origin through the labeling "protected geographical indication" (PGI), "traditional specialties guaranteed" (SGT), "protected designation of origin" (PDO), which makes these products contribute to the development of the local economy, to the protection of the environment and to the increase of the income of producers in the rural environment [9]. At the same time, these products are considered to be healthier, which makes consumers pay more, starting from the fact that they have much better organoleptic properties, but also have positive effects on health [3, 13].

## MATERIALS AND METHODS

The realization of the research involved, on the one hand, the analysis of specialized literature regarding the role and place of traditional products on the food market, but also in the development of important sectors of the economy, such as tourism, the local economy, etc. On the other hand, it was followed the testing of consumer preferences regarding the sensory characteristics of traditional products in the cheese category, these being some of the most sought-after traditional products, along with fruits and vegetables [2].

In the study, the intrinsic attributes such as appearance, smell, taste, aroma were appreciated with the help of the hedonic test and the scoring scale method, by 83 untrained tasters. The research was carried out in May 2022, and the tasters were represented by customers of the Traditional Products Raffle held weekly at the location in Bd. Marasti no. 61 from Bucharest.

The scoring scale method assesses the respondents' attitude regarding the sensory dimension of food products, depending on which the purchase decision is taken or not [10]. The scoring ranged from 0 to 4, 0 meaning - inadequate, 1 - adequate, 2 - good, 3 - very good and 4 - excellent [4]. The maximum score that can be obtained is 20 points. In relation to the weighting factor specific to each appreciated characteristic and the average score, the weighted average score that places the product in the quality class was

determined. Starting from the maximum score, according to the algorithm established by Onete et al., it results that a score that represents between 91-100% of the total score places the analyzed product in the "excellent" quality class, a score that represents between 71-90% of the total score places the analyzed product in the "very good" quality class, a score that represents between 51-70% of the total score places the analyzed product in the "good" quality class, a score that represents between 31-50% of the total score places the analyzed product in the "satisfactory" quality class, and a score representing less than 30% of the total score places the analyzed product in the "unsatisfactory" class.

The hedonic test is a preferential test that was used in order to determine the degree to which consumers positively or negatively appreciated the taste qualities of traditional products, and it involved the awarding of marks between 1 and 9 for each of the samples. The notes were recorded in the evaluation sheets in which the consumers' preferences were classified in relation to the following degrees of appreciation: extremely pleasant, very pleasant, pleasant, weakly pleasant, indifferent (these reflecting the positive sensations) and slightly unpleasant, semi-pleasant, completely unpleasant, extremely unpleasant (they reflect negative feelings). Depending on the determined scores, the best product can be established, but the degree of preference can also be measured. The formula was used to determine the global score:

$$\text{Overall score} = (N \times 9 + N \times 8 + N \times 7 + N \times 6 + N \times 5 + N \times 4 + N \times 4 + N \times 3 + N \times 2 + N \times 1) / ND,$$

where:

$N$  - number of tasters who gave the same grade

$ND$  - total number of tasters [14]

Following the centralization of the answers, it was possible to determine the degree of satisfaction or dissatisfaction of the consumers regarding the traditional products from the case study (cheese in fir bark,

smoked cheese, cumin cheese and dill curd). the obtained results were interpreted statistically and formed the basis of the conclusions. The disadvantage of the hedonic test is represented by the fact that the respondents are influenced by the psychological effect that the analyzed products have on them, as a result of the fact that they compare the sensory properties with those of other similarly known products.

## RESULTS AND DISCUSSIONS

The research was carried out starting from the answers provided by the 83 untrained tasters, of whom 63% were women and 37% were men.

The structure in relation to the level of salary and education is presented in Table 1.

Table 1. Demographic information

Characteristic	Type	Frequency	%
Sex	Female	52	62.65
	Male	31	37.35
Age	18-24 years	14	16.86
	34-54 years	38	45.78
	54-65 years	27	32.53
	over 65 years	4	4.83
Income level (RON)	2,000 – 3,000	9	10.84
	3,001 – 5,000	17	20.48
	5,001 – 7,000	18	21.69
	7,001 – 9,000	23	27.71
	over 9,001	16	19.28
Education	Secondary education	27	32.53
	Higher education	52	67.47

Source: own processing.

Table 2. The frequency of giving scores to traditional cheese samples

Characteristic	Points	Cheese in fir bark	Smoked cheese	Cheese with cumin	Curd with dill
Appearance	4	12	14	19	13
	3	42	37	36	29
	2	27	26	25	32
	1	2	6	3	4
	0	0	0	0	5
Smell	4	22	19	17	13
	3	38	27	35	15
	2	26	34	23	27
	1	3	18	6	31
	0	0	3	2	7
Taste	4	19	1	16	13
	3	38	25	32	26
	2	18	38	23	24
	1	5	10	9	11
	0	3	6	3	9
Consistency	4	17	19	21	8
	3	29	34	31	16
	2	27	21	24	32
	1	6	7	5	14
	0	4	2	2	13
Color	4	14	19	20	13
	3	37	36	28	29
	2	21	21	26	33
	1	9	4	7	3
	0	4	3	2	5

Source: Own calculation.

The measurement of consumer perception regarding the sensory characteristics of traditional cheeses was achieved by applying the scoring scale method. The 4 samples (cheese in fir bark, smoked cheese, cheese with cumin and curd with dill) were presented simultaneously, and the ordering criteria were: appearance, smell, taste, consistency and color.

The scoring scale was made up of points given to each appreciated characteristic, these being between 0-4 points.

The manner in which the points were awarded to the 4 products for the appreciation of the 5 characteristics, by the 83 respondents, are presented in Table 2.

By calculating the average score for each individual product and by correcting it with the help of the weighting factor, could determine weighted average scores for the 4

products tested. According to the specialized literature, the weighting factors used in the case of bras were: 0.4 for appearance, consistency and color; 0.8 for smell; 1.2 for taste.

In establishing the quality classes for the 4 samples analyzed, we used the centralizing sheets in order to determine the weighted average scores (Table 3).

Based on the points awarded for the appreciation of the 5 sensory characteristics of the traditional product "Cheese in fir bark", the total average score was 13.78 points out of a total of 20 possible points, which places it in the category of "good" products (69.34 %). The most appreciated sensory characteristic was the smell, for which the average score was 3.10 points. In order of scoring, the tasters appreciated the smell, taste, appearance, color and consistency (Table 3).

Table 3. Weighted average score for "Cheese in fir bark"

Sensory characteristic	Factor of weighting	Average score	Weighted average score
Apparance	0.4	2.77	1.10
Smell	0.8	3.10	2.48
Taste	1.2	2.78	3.34
Consistency	0.4	2.59	1.04
Color	0.4	2.63	1.05
Total		13.78	9.01

Source: Own calculation.

For the product "Smoked cheese" a total score of 14.11 points was obtained (71% of the total score), which places it in the category of "very good" products. In

order of appreciation of the sensory characteristics, they were: smell, taste, color, appearance and consistency (Table 4).

Table 4. Weighted average score for "Smoked cheese"

Sensory characteristic	Factor of weighting	Average score	Weighted average score
Apparance	0.4	2.71	1.08
Smell	0.8	3.00	2.40
Taste	1.2	2.89	3.47
Consistency	0.4	2.73	1.09
Color	0.4	2.77	1.11
Total		14.11	9.16

Source: Own calculation.

The total average score of 13.69 points and the weight of 68% of the total score places "Cheese with cumin" (Cascaval cu chimion", in Romanian) in the category of "good"

products. The sensory characteristics were appreciated in the following order: appearance, consistency, smell, taste and color (Table 5).

Table 5. Weighted average score for "Cheese with cumin"

Sensory characteristic	Factor of weighting	Average score	Weighted average score
Apparance	0.4	2.86	1.14
Smell	0.8	2.71	2.17
Taste	1.2	2.69	3.22
Consistency	0.4	2.77	1.11
Color	0.4	2.59	1.03
Total		13.69	8.67

Source: Own calculation

Table 6. Weighted average score for "Curd with dill"

Sensory characteristic	Factor of weighting	Average score	Weighted average score
Apparance	0.4	2.49	1.00
Smell	0.8	2.51	2.00
Taste	1.2	2.28	2.73
Consistency	0.4	2.53	1.01
Color	0.4	2.53	1.01
Total		12.34	7.76

Source: Own calculation.

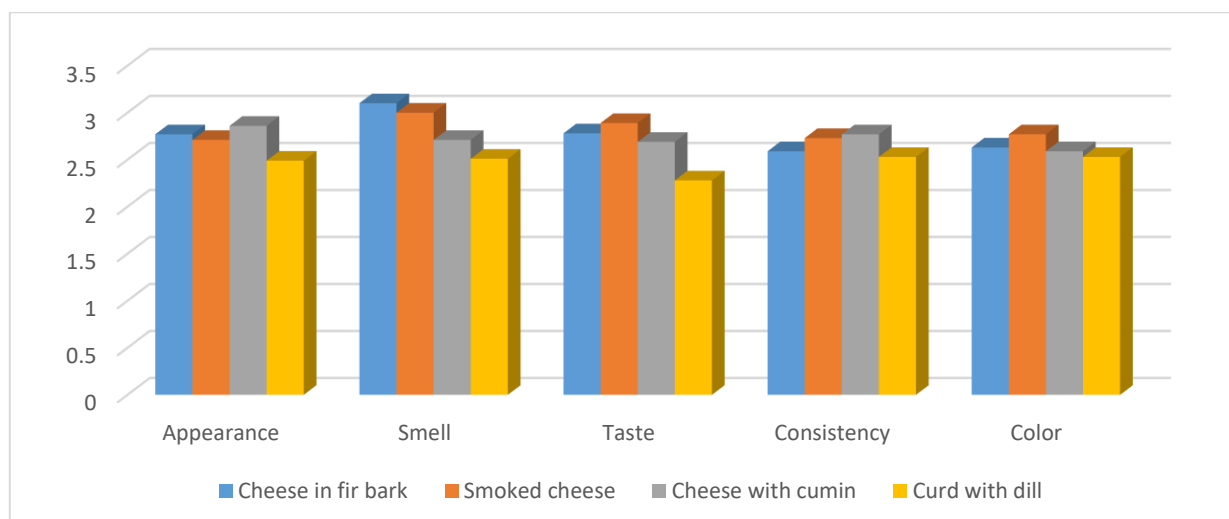


Fig. 1. Distribution of sensory characteristics by product in relation to tasters' appreciation

Source: Own calculation.

The product "Curd with dill" ("Urda cu marar", in Romanian) obtained a total average score of 12.34 points, which represents 62% of the maximum score, thus placing the product in the "good" category from the point of view of the quality class. The respondents first appreciated the taste, then the smell, followed by the consistency and color (with 1.01 points), and finally the appearance, located only 0.01 points after the color and consistency (Table 6).

Figure 1 highlights the most appreciated sensory characteristic of each product, as well as the order of appreciation. Thus, we find

that in terms of "appearance", the most appreciated product in relation to this characteristic was "Cheese with cumin" followed by "Cheese in a fir tree basket". Regarding the "smell", the product that was most appreciated in relation to this characteristic was "Cheese in a fir basket", followed by "Smoked cheese". From the point of view of "taste", the most appreciated product was "Smoked cheese", followed by "Cheese in a fir basket", "Cheese with cumin" and "Curd with dill". In terms of "consistency", the first place was "Cheese with cumin", and the last place was "urfa with

dill", and in terms of "color", the first place was "Smoked cheese", followed by "Cheese in a fir tree basket", "Cheese with cumin" and "Urda with dill" (Figure 1). Making a ranking of the 4 sensory appreciated products, it turns out that the most appreciated product was

"Smoked cheese" with a score of 14.11 points, followed by "Cheese in fir bark" with a score of 13.78 points, "Cheese with cumin" with 13.69 points and then "Urda with dill" with 12.34 points (Figure 2).

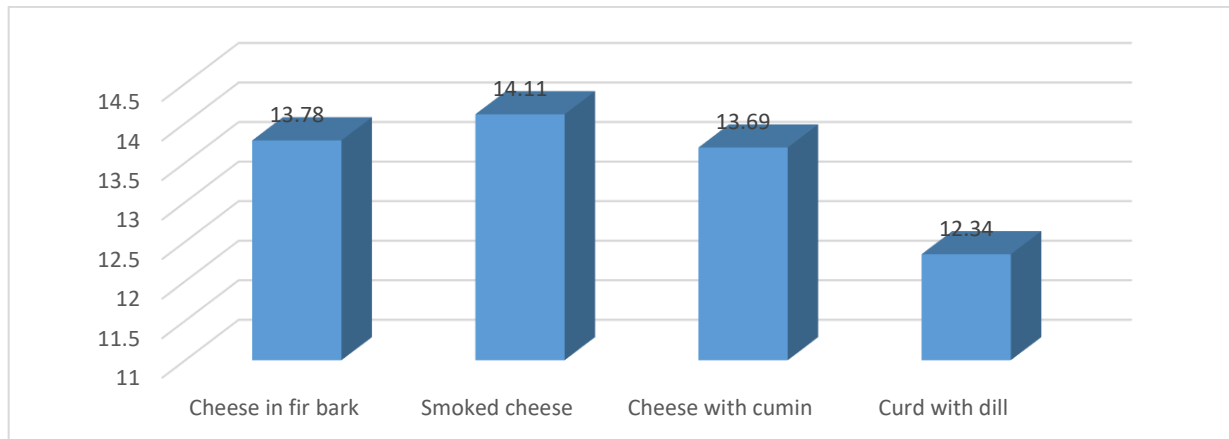


Fig. 2. The ranking of traditional products appreciates in relation to the sensory characteristics  
 Source: Own calculation.

Table 7. Degree of appreciation

Degree	Cheese in fir bark	Smoked cheese	Cheese with cumin	Curd with dill
Extremely nice (9)	9	11	8	7
Very nice (8)	23	27	31	22
Nice (7)	27	23	18	24
Least liked (6)	11	9	11	10
Indifferent (5)	9	7	7	13
Slightly Unpleasant (4)	2	3	5	4
Half nice (3)	2	3	3	3
Completely Unpleasant (2)	0	0	0	0
Extremely Unpleasant (1)	0	0	0	0
Average	6.98	7.06	6.94	6.71

Source: Own calculation.

In order to verify the tasters' preferences regarding the 4 traditional products, we applied the hedonic test, finding that the highest average score was obtained by the product "Smoked cheese" (with 7.06 points), followed by "Cheese with cumin" (6.98 points), "Cheese in fir bark" (6.94 points) and "Curd with dill" (6.71 points). We find that the order of consumer preference has remained the same, what has changed, but insignificantly, being the degree of appreciation (Table 7).

It follows that the scores obtained place the traditional products tested in the category of

accepted products and which induced the tasters positive feelings towards them.

It was found that there is a direct correlation between the salary level and the preference for traditional products, finding that people aged between 34-54 years and 54-65 years are the most interested in traditional products. The level of income is also important, finding that people with incomes over 5,000 Ron are the ones who purchase these products.

Therefore, we find that the use of the 2 methods did not result in significant differences in terms of the degree of acceptance of the traditional products tested, which confirms the fact that the tested people

managed to make a sensory assessment in relation to the sensory characteristics perceived by them. Therefore, sensory analysis is one of the methods that must be taken into account when making decisions about the marketing of food products, especially since it is found that it has begun to occupy an increasingly important role in the food industry, being used not only in making marketing decisions regarding the range of products obtained, their positioning on the market, market segmentation and price setting, but also in choosing the target market, depending on the product's characteristics. Therefore, we consider that the quantitative measurement of some sensory characteristics such as: appearance, flavors, aroma, taste, color, texture, etc. is essential for the producer.

## CONCLUSIONS

The tests used in the sensory evaluation of food products are the basis for identifying consumer preferences, being important for the development of products demanded by the market, but also for increasing their quality. At the macroeconomic level we can even talk about the competition of local and global markets. An important aspect that must be taken into account when resorting to sensory analysis is the choice of correct, representative methods so as to avoid the use of irrelevant or wrong results and which, in turn, have a negative impact on the products sold. This can be avoided as long as scientific principles are used that determine objective answers regarding the sensory properties of the researched products. Therefore, what the science of sensory analysis must ensure is the understanding of the importance that sensory characteristics have in consumer acceptance of products.

The reason why we consider and recommend the use of different sensory analysis methods, both discrimination and descriptive, is in the first case to provide information on how the tested products are perceived, and in the second case to identify the characteristics of the products, to measure them, to determine the presence of a characteristic or its intensity.

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