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Consumer attitudes and olive oil acceptance: the traditional consumer

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SUMMARY

Consumer attitudes and olive oil acceptance: the traditional consumer

In order to investigate extra virgin olive oil acceptance, preference tests were carried out on two olive oil consumer groups, representative of two different cultures and traditions.

The first consumer group consisted of 20 South Italian families from Potenza. The second group consisted of 152 Northern individual consumers tested in Milan.

These tests were carried out on 6 oils (2 Greek, 2 Spanish and 2 Italian) produced during the 1992-93 season.

Similar methods were employed in both tests but they were carried out under completely different environmental conditions. For our testing of the 20 families we tried to ensure that the consumption conditions remained as traditional as possible. On the contrary, the test carried out on the 152 consumers was more standardized and allowed a direct comparison between the samples. The responses to preference tests were processed using the PREFMAP statistical method.

The preferences of Southern Italian consumers are sharply differentiated: what is considered to be optimal for a consumer may be unacceptable for another one.

Whereas the preferences expressed by the consumers of a city in Northern Italy is more homogeneous. Therefore, for both Southern and Northern Italian consumers, the sensory profile of extra virgin olive oil should be programmed and standardized. This allows maximum acceptability to be obtained and consumer expectations to be fulfilled.

KEY-WORDS: Acceptance - Consumer - Virgin olive oil.

1. INTRODUCTION

Results from preference tests, carried out on two groups of traditional consumers of extra virgin olive oil (EC Flair, 1990-93) are summarized in this research note.

The aims of this research were as follows:

- to verify whether preferences of traditional consumers (Italy) are considerably different from preferences of potential consumers (England) (McEwan, 1994);
- to verify whether preferences of consumers from a typical Southern town (Potenza) differ from those of consumers from a city in Northern Italy (Milan);
- to correlate preferences to both specific sensory attributes and the origin of oils.

2. EXPERIMENTAL PART

All tests were carried out on 6 extra virgin olive oils (2

Greek, 2 Spanish and 2 Italian) produced during the 1992-93 season.

The six samples with the respective codes are reported in table I.

Table I

The six samples of extra virgin olive oil with the respective codes used for preference tests.

G0102PE	=	G01
G0202CE	=	G02
I0302PR	=	I03
I0402CE	=	I04
S0501CE	=	S05
S0603CE	=	S06

The tests were performed on two consumer groups, representative of two different cultures and traditions, and were carried out using 2 different methods.

The first consumer group consisted of 20 South Italian families from Potenza. The second group consisted of 152 Northern individual consumers tested in Milan.

Essential differences in Northern and Southern attitudes towards extra virgin olive oil had been noted prior to selecting the two panels.

Southern Italian families use extra virgin olive oil either as the only or prevailing condiment. They buy their oil stocks for a year directly from the producer. They, sometimes mistakenly, consider this practice an essential guarantee for the naturalness and genuinity of the product.

Conversely, Milanese consumers do not use extra virgin olive oil exclusively, but often consume other vegetable oils and animal fats. They buy extra virgin olive oil in supermarkets where there is of course no direct relationship with the producer. In this case, the purchase is usually based on confidence in the brand which is in turn dependent on the sensory characteristics of the product.

Similar methods were employed in both tests but they were carried out under completely different environmental conditions.

Each family on the Potenza panel was asked to use the oil as a dressing for green salad during the meal. Each

family expressed its opinions on the quality of the extra virgin olive oil in accordance with the following scale of multiple choice responses:

- ☐ extremely pleasant
- ☐ very pleasant
- ☐ fairly pleasant
- ☐ not pleasant nor unpleasant
- ☐ fairly unpleasant
- ☐ very unpleasant
- ☐ extremely unpleasant

The consumers on the Milanese panel were requested to carry out the tests at the sensory analysis laboratory of the University of Milan and express their views outside a domestic environment.

Separate samples were supplied to the Potenza families for feedback at three day intervals.

The consumers on the Milanese panel received six samples at the same time and were requested to taste each oil on a piece of bread and express their preferences on a scale from 1 (the least preferred) to 9 (the most preferred).

This was the essential difference in the testing methods used on the 2 groups.

For our testing of the 20 families we tried to ensure that the consumption conditions remained as traditional as possible. The limitation of this method is the difficulty of having to use homogeneous judgement parameters over a long period of time; moreover, the samples were supplied separately.

However, the test carried out on the 152 Milanese consumers was more standardized and allowed a direct comparison between the samples. The limitation of this method is the fact that oil is not tasted in a traditional environment.

The results from the 20 families were derived from collective discussions, whereas the results from the 152 consumers were based on individual reflections.

The responses to preference tests were processed using the PREFMAP statistical method (MacFie and Thomson, 1984). This method consists of comparing acceptance information with 'objective' data on the sensory profile of samples. In practice, data processing requires the calculation of the coefficients of the following polynomial for each consumer:

$$Y = \sum_i \alpha_i X_i + \sum_j \beta_j X_j + \sum_{ij} \gamma_{ij} X_i X_j \quad \text{with } i, j = 1, \dots, k$$

The independent variables, $x_1 \dots x_k$, are the sensory coordinates. The dependent variable Y is the preference score vector.

Data must be processed by using 4 mathematical models: linear, circular, elliptical and vectorial.

Preference data were processed by using these 4 models. The model that produced the best-fit with the experimental data was then selected. In our case, the circular and elliptical models proved to be the most adequate for all the consumers.

Principal Component Analysis was performed by using UNSCRAMBLER version 4.0 (Camo A/S, 1986) and Preference Mapping by using MDPREF program (Smith, 1992).

3. RESULTS

Figure 1 shows the Score Plot of the 6 samples obtained from the Principal Component Analysis.

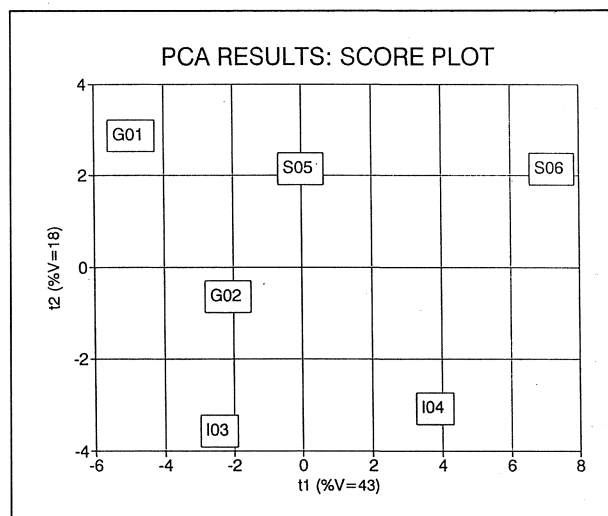


Figure 1

Results of Principal Component Analysis the Score Plot.

Figure 2 represents an illustration of the Loading Plot superimposed on the Score Plot. The Loading Plot represents the importance of the 18 sensory descriptors of the 6 oils over the Score Plot.

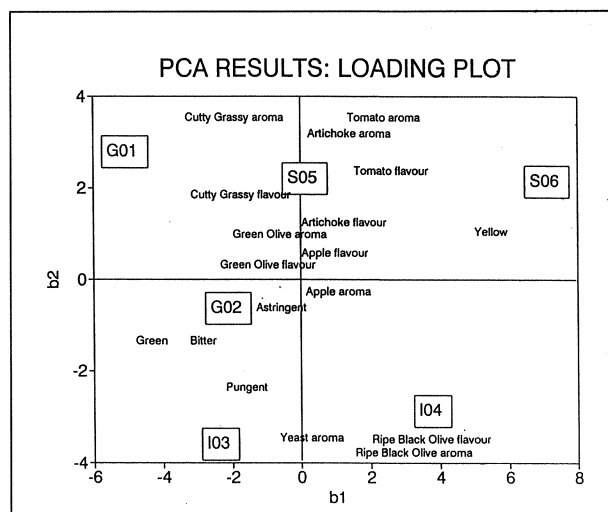


Figure 2

Results of Principal Component Analysis: the Loading Plot superimposed on the Score Plot.

One notices that the oils are clearly differentiated and characterized by different sensory descriptors. For example, the Italian samples I03 and I04 are characterized by ripe black olive flavour and aroma, yeast aroma and are pungent; the Spanish sample in this area is characterized by tomato and artichoke flavour and aroma and yellow colour; the Greek sample in this area is characterized by cut grass and green olive flavour and aroma.

S05, one of the Spanish samples, was described by some as having the tomato flavour and by others as possessing the properties of cut grass. In other words, this oil was perceived by many tasters to include some of the descriptors ascribed to the other Spanish oil as well as those attributed to the Greek G01 sample.

Figure 3 shows processed data obtained from the 20 families using the MDPREF statistical method.

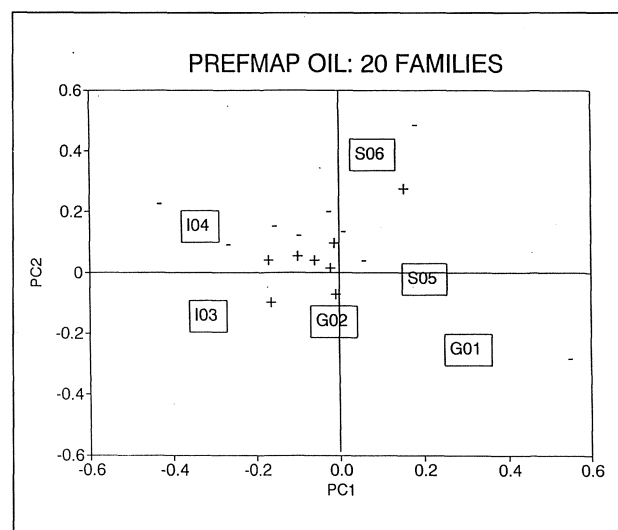


Figure 3

Results of MDPREF: data obtained from the 20 South Italian families.

It illustrates a sensory attribute space, where the positions of the 6 oil samples, obtained from the sensory profiles determined by a trained panel, are shown. In this space, the + symbols represent ideal profiles corresponding to the preference expressed by some families. The - symbols represent the sensory profiles that some other families found unsatisfactory.

Consequently, data processing suggests that family judgements allow desirable or undesirable profiles to be detected.

The interpretation of this figure is very interesting. For consumers definitely preferred certain samples, whereas some other oils were considered almost unacceptable.

However, in most cases the preferred or undesirable profiles were located in an area almost equidistant from the samples. It is worth noting that several families expressed contrasting opinions based on very similar sensory profiles. In fact, + and - symbols mix and overlap in the same area of the sensory space.

Two observations can be drawn from this result, as follows:

- 1) that the preferences of Southern Italian consumers are sharply differentiated: what is considered to be optimal for one consumer may be unacceptable to another;
- 2) as a result, it is necessary to standardize the sensory profiles of individual products in order to target customers effectively, for a modification in the sensory profile may change the consumer's attitude from preference to non-acceptance.

Figure 4 shows the results of the test carried out on the 152 Milanese consumers.

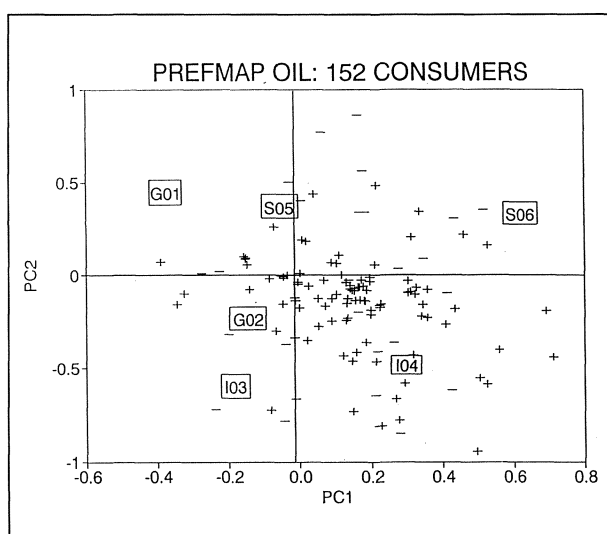


Figure 4

Results of MDPREF: data obtained from 152 North Italian consumers.

In this case too, the circular and elliptical models proved the most suitable for interpreting the experimental data.

The overall results shown on this graph are very different from those obtained from the test carried out on the 20 families.

Most assessors prefer a sensory profile enclosed in a specific area of the graph. This area is very close to the sensory profile of one of the 6 samples, namely the Greek oil G02, which, therefore, proves to be the most preferred sample.

By using the score (oils samples) and loading (attributes) plots (figure 1 and 2) it is possible to determine which oils are the most preferred, and why.

4. CONCLUSIONS

Two conclusions can be drawn from this result as follows:

- 1) the preferences expressed by the consumers of a city in Northern Italy are more homogeneous than those of the South Italian families;
- 2) this suggests that oils with sensory profiles having wide acceptability can be produced.

Therefore, for both Southern and North Italian consumers, the sensory profile of extra virgin olive oil should be standardized. This would permit acceptability to be maximized and consumer expectations to be better fulfilled.

It is also evident that marketing oils under the legal designation 'extra virgin', is not sufficient to fulfill consumer expectations, or guarantee customer loyalty.

BIBLIOGRAPHY

- CAMO A/S, (1986). -Unscrambler, Version 4.0- Trondheim, Norway.
- EC Flair Funded Project (1990-93) AGRECT-0046. -"The study of the sensory and nutritional quality of virgin olive oil in relation to variety, ripeness and extraction technology"-.
- MacFie, H.J.H. and Thomson, D.M.H. (1984). -"Preference Mapping and Multidimensional Scaling" in "Sensory Analysis of Food", pp. 351-374.- J.R. Piggot, (Ed.). -Elsevier Applied Science, London.
- McEwan, J.A. (1994). -"Consumer attitudes and olive oil acceptance: the potential consumer"- these proceedings.
- Smith, S.M. (1992). -MDPREF, Version 5.1. Institute of Business GT, Brigham Young University, Provo, 84602 Utah.