[O46]

Unfolding models in the analysis of preference data - Theory and Applications

E. Teillet*[1], C. Petit[2], P. Courcoux[3]
[1]*SensoStat, France,* [2]*Puratos, Belgium,* [3]*ONIRIS, France*

In the context of hedonic studies, internal and external preference mappings (Greenhoff and MacFie, 1994) are popular methods designed to understand consumers' preferences and identify a hypothetic "ideal" product. Nevertheless, these methods present drawbacks that could prevent their use in some situations. For instance, internal preference mapping considers consumers' preferences as vectors, what remains problematical for several studies in which a model "the more, the best" does not fit the preference data. On the other hand, external mapping with a quadratic model should need at least 7 products to identify an ideal point.

In this context, the multidimensional unfolding model, which enables an internal preference mapping with ideal point interpretation, may be a good alternative. It is an attractive model which has been described several times in literature but remains quite unused (Rousseau et al., 2012; Van de Velden et al., 2013) because of degeneracy problems which have been solved only recently (Busing et al, 2005).

In this approach, the preference scores given by consumers to products are considered as proximities between consumers and products. The resulting map is a joint representation of products and consumers. Afterwards, various statistical analyses (clustering of consumers, projection of sensory attributes or consumers' characteristics…) can be applied to ease interpretation. "Heat plots" can also be drawn to identify sensory areas where preference is maximized.

This presentation will first return to the basics of the unfolding theory (stress definition, algorithm, possible transformations…) and will then present several applications of this model on real bakery and chocolate products.

Finally, unfolding models applied to preference assessment provide intuitive and straightforward interpretations. Results obtained in the several examples presented show good adjustments to the initial preference data and good correlations with the sensory characteristics of the products.

Keywords: Multidimensional Unfolding, Preference Mapping, Ideal Point Model