

Perceptive Sensory Mapping

The Next Level in Sensory Mapping – Solving the Redundancy Bias of Attribute Lists in Descriptive Analysis

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Background

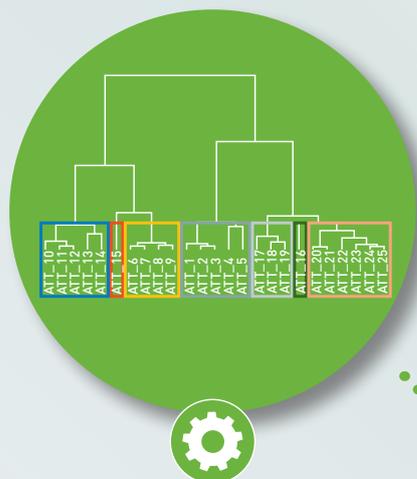
In Descriptive Analysis, a set of products is described with a list of attributes that characterizes the entire universe of perceivable product properties and their respective intensities. This results in a long list of appropriate descriptors related to the sensory universe of the product set.

Creating a sensory mapping by means of Principal Component Analysis is generally considered as a dedicated ally, summarizing how the respective products are objectively characterized one compared to the others.

However, because some attributes are redundant, e.g. fruity in smell, taste and aftertaste and so strongly correlated between each other, some sensory directions may be over-weighted in the positioning of products in the final mapping. The classical sensory mapping doesn't take into account this problematic redundancy of the attribute list. As a result, such Sensory Mappings can give a false reading of the sensory similarities and differences between the products and their overall positioning to each other. SAM's Perceptive Mapping solves this bias.

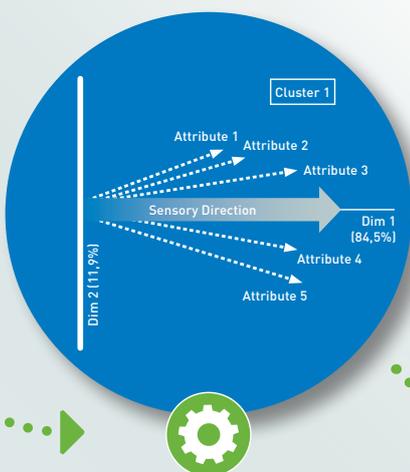
The Perceptive Mapping Approach

Identifying Groups of Redundant Attributes

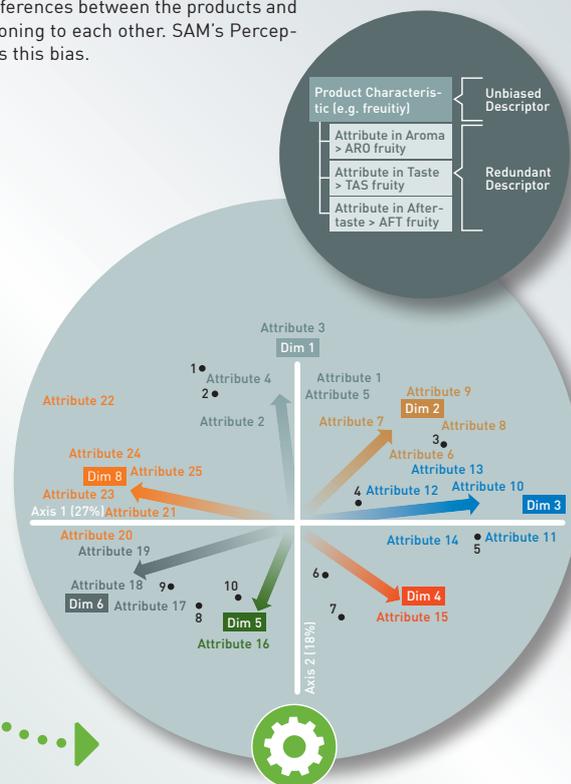


Building a hierarchical clustering of variables/attributes or product descriptors. Ensuring that each cluster of attributes represents one sensory direction only (i.e. is unidimensional) by means of a parallel analysis.

Summarizing Redundant Attributes



Performing a PCA on each cluster of attributes in order to extract the products coordinate on the first axis. This first axis being the best possible summary of all the information contained in the cluster composed of redundant attributes.



Computing PCA based on summarized clusters, resulting in a truer positioning of the products. The original attributes of each cluster can be added in the mapping afterwards, as illustrative descriptors, to better portray the entire sensory universe.

Product Characteristic (e.g. fruity)	Unbiased Descriptor
Attribute in Aroma > ARO fruity	
Attribute in Taste > TAS fruity	Redundant Descriptor
Attribute in Aftertaste > AFT fruity	

Benefits

The Perceptive Mapping is a new approach in Descriptive Analysis. It is a creative application of cluster analysis in conjunction with multiple PCAs and provides a new and improved visualization of the interaction between products and their respective characteristics:

- Redundant attributes are statistically identified and grouped together into product characteristics and in so doing removing redundancy
- Sensory directions of specific product characteristics and their strength describing similarities and differences are now reflected by their **real weight** and no longer biased by redundant descriptors some of the product characteristics may be composed of.
- As a result, products are positioned in an accurate, unbiased and properly weighted manner within the Perceptive Sensory Mapping

