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Become an expert in sensory analysis





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External preference maps

If I ask myself **how is my product?** I can do a descriptive study with a trained panel. If I ask myself , **do people like my product?** I can do a hedonic study with consumers.

But what do I do if my question is why do people like my product?

The ideal technique is **external preference maps**, as they cross hedonic and descriptive data.

Samples

The choice of samples is key to the correct development of this technique.

The multivariate nature of the data means that it is not advisable to use less than 7 samples, although ideally this number should be increased.

In addition to the number of samples, it is also crucial to select samples that represent well the whole sensory space in which the product under study can move. In other words, the samples should not be homogeneous; for each attribute there should be samples with a low intensity and a high intensity in order to be able to detect how the consumer reacts.

Descriptive

A trained panel of tasters prepares a **sensory profile** that captures the intensity of the most important attributes using an unstructured scale from 0 to 10.

The number of tasters should be between 8 and 12.

The results obtained will give a detailed description of the sensory profile of the samples.

Hedonic

The hedonic study shall be carried out with a panel of regular consumers of the product to be studied.

The recommended number of consumers should not be less than 100.

The attributes to be evaluated can be several. A separate map is drawn up for each attribute, usually with the overall assessment. It is evaluated on a structured scale.





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External preference maps

Calculations

The first step is to calculate a PCA with the descriptive data, in which the samples will be the variables. With this PCA we can elaborate a biplot that generates a 'map', in which each coordinate (each point on the map) corresponds to a different sensory profile.

Using the coordinates of the evaluated samples, regression models are created that relate the hedonic acceptance and the coordinates of the samples.

These models are used to estimate the **expected acceptance** at each of the points on the map.



Graph interpretation

In the external preference map the **samples**, represented in black, closest to each other are sensorially similar samples and are characterised by high intensities of the **attributes**, represented in grey, that are positioned in their direction and low intensities of those positioned in the opposite direction.

Samples positioned in warm areas (red-orange) have higher acceptability and those positioned in cold areas (green-blue) have lower acceptability.

We can estimate **which attributes would increase acceptance** and which would decrease it by looking at the area of the map towards which our sample would move.

